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Editorial Notes

THESE Notes try to reflect and comment on what is being talked about most in archaeological circles ; that may be a new discovery, the solution of a problem or a matter of archaeological organization. There can be no doubt that the dominant subject at the present moment is organization, and it is not confined to those who are professionally interested. There have been two lengthy correspondences in the *Times*, one about the British Museum and the other about the destruction of prehistoric monuments. These are matters that interest very many people ; the writer of these Notes is able, as an Editor, to form some idea of what his readers think about it from the letters they write to him ; and he also has many opportunities, when using the British Museum Library and photographic services and when working in the various departments, of picking up information from the inside. He is free to publish what he likes, and does so with a full sense of responsibility.

Everyone who knows anything about the British Museum knows that it is staffed throughout by hard-working, competent people, who are greatly distressed at being unable to perform their duties properly. They cannot do so because their departments are understaffed and because they have no room to exhibit the objects in their keeping. The lack of space, keenly felt long before the war, became crippling when parts of the building were destroyed by bombing. That was more than a decade ago, but the Prehistoric Room is still an empty shell and all that magnificent collection of bronze implements and pottery is still necessarily packed away underground. We write feelingly on this matter because it was from ranging freely through this room and making notes there that we ourselves began to learn prehistory. It was an excellent beginning ; but if something is not done soon a whole generation—and a very lively one—will be deprived of that opportunity and start its career with a severe handicap.

We give this merely as an example ; there are many others. The position has been well known to the Trustees for some time past, and it is due of course to lack of money. For this the Treasury is primarily responsible, but it would be wrong to suggest that the British Museum is treated with deliberate stinginess either by the Treasury or by the

other government departments with which it has to deal. The root of the trouble is, we think, that there is a tendency to control the public financing of the British Museum by rigid rules designed for the Civil Service generally, and these make nonsense when applied to museums and libraries. In practice the Trustees have to negotiate with individual Treasury officials who cannot be expected to understand the problems which the Director and Trustees have to face. A greater user-knowledge of such institutions and a clearer recognition of what they are about is needed in determining the opening or closing of the national purse. In the present crisis we would address a personal appeal to the Chancellor of the Exchequer himself, convinced as we are that he is a genuine lover of learning ; and we would assure him that the position is very serious indeed ; it would hardly be too much to say that the British Museum is slowly dying for lack of support.

Surely it is wrong, both in equity and administration, that the Trustees should have to entreat mouthful by mouthful for the pitiful sustenance they know to be necessary in order to be moderately—not properly !—useful to those who use the institution and whose demands upon it develop very rapidly. After conservation the first duty of the Trustees is to make the collections accessible and useful. To do this nothing wildly extravagant is required ; it is really absurd that they should not have within reason the staff, money and accommodation needed for essential services. All galleries available for public inspection should be permanently open to the public. The laboratory and binding services should not be in any way restricted. The staff should be sufficient to cover adequately the present scope of the collections, and to ensure that the services (particularly the photographic service) are efficient and punctual. Minor improvements in accommodation possible in the existing premises should be given high priority.

There is nothing fantastically costly in such demands, nor is there any extravagance in keeping the Library properly supplied with foreign books and all the necessary copyright material. The lamentable state of arrears in cataloguing has already been pointed out by the Standing Commission.* The tragedy of allowing so great a collection to be crippled seems to be obvious to everybody except those who control the purse-strings. It is, we know at first hand, felt to be a tragedy by those most closely concerned.

And that brings us back to the point already mentioned, about treating the British Museum just like any other government department. Whoever heard a government official of the other sort express deep feeling of a personal kind about his department? The British Museum is unique and that's the end of the matter. But if it is to be treated as just another department one might pertinently point out that it should be allowed the same increase of staff as all of them have been allowed. The Treasury cannot have it both ways. Nor, we feel sure, do the Trustees wish to increase their scope at the expense of other institutions. The growth of other museums and specialist libraries

* Fourth Report of the Standing Commission on Museums and Galleries, 1949–53. H.M. Stationery Office, 1954. *1s 6d.*

can only lighten their own task. They ask simply that an institution unique in the world should be allowed to make a unique contribution to the materials of learning in an efficient, and not in a publicly disgraceful, way. That surely is a reasonable request.

An increase of staff is necessary to cope with arrears and for all sorts of other reasons, amongst which is the need to keep pace with the public expectation of what a museum and library should do. For instance, the Guides to the Stone, Bronze and Iron Ages and later periods are out of print. They were not only best sellers (i.e. the public wanted them) but also contributions to knowledge that were often quoted in learned contexts. They were text-books recommended to students and therefore of educational value. For all three reasons they had a valid claim on public funds (to which they also made a return). Now there are complaints that they are unobtainable, and demands that they should be rewritten in the light of the very extensive new knowledge acquired in the interval. But no one person could rewrite them now ; no one student is equally at home in all those lengthy periods, nor to-day should he be expected to be. We need far more than the existing staff in the Department of Prehistory—as it might well be renamed—to be able to satisfy this demand from the public.

One last word. We feel sure that the Treasury officials greatly underestimate the body of opinion which these Notes are trying to represent and speak for. We have many contacts with the universities one of which honoured simultaneously both the present Chancellor of the Exchequer and the Editor of ANTIQUITY. We would assure the Chancellor and the Treasury officials that both there and elsewhere any action of theirs to improve the position will be warmly welcomed. Such action would relieve the Trustees of having to plead and plead for minor things which the Keepers ask for and which are *immediately* necessary.

We do not intend to discuss the problem of the conservation of Celtic fields and the like, for our readers will by now have had enough of this distressful but necessary pleading. Instead we are putting in a small plea of our own. Our issue for last September (No. 107) proved very popular and was sold out. We are badly in need of copies to complete sets, and if any of our readers can spare their copies we would gladly take them back. We might mention that the London Library is in need of a copy.

We record with very great sorrow the death of Roland Austin, who for more than 20 years was closely associated with ANTIQUITY, first as Assistant Editor and then as Joint Editor. When he retired for reasons of health at the end of 1948 we recorded ANTIQUITY's debt of gratitude to him, on behalf of all those with whom he had come in contact during his editorial work. We feel sure that they will wish us to offer, on their behalf and our own, our sympathy to his family in their loss.

Hogback Tombstones and the Anglo-Danish House

by James Walton

In a number of publications W. G. Collingwood has described the north country hogbacks and he has suggested that they were replicas in stone of the dwellings prevailing at the time among the people responsible for their erection[1]. He was primarily concerned, however, with their development and dating, based upon the ornament employed. In this paper I have concentrated rather on the hogback as a representation of an Anglo-Danish house and its bearing on the origin of cruck construction.

The hogback is a recumbent tombstone in the form of a long, low house with a roof-ridge slightly arched lengthwise. Its ground plan (fig. 1, d) is bombé in shape, affording a plan which has only rarely been revealed by excavation. From Glendarragh, The Braaid, Isle of Man, Fleure and Dunlop have described two alignments which they consider represented the side walls of a boat-shaped house (fig. 1, a). These, they contend, were built of more durable materials to provide a stronger construction whilst the gable walls, which contained the entrances, were probably built of wattle. This is supported by the evidence of the hogbacks which show low stone ground-walls at the sides only and the walls at The Braaid are probably survivals of similar ground-walls. Fleure and Dunlop compare it to the ' banqueting hall ' of Hofstaoir, Mývatn, in northern Iceland, which is 118 feet long and has incurved stone side walls varying from 19½ feet, at the ends, to 26 feet, in the middle, apart (fig. 1, b)[2].

The finest examples of this plan so far discovered are the houses in the fortified Viking settlement of Trelleborg, near Slagelse in western Zealand, which date from a little before a.d. 1000 (figs. 1, c and 2)[3]. These boat-shaped houses have been reconstructed by C. G. Schultz under the direction of the Danish National Museum. They have been given an arched roof carried on queen-post trusses and plank walls surrounded by a roofed gallery (fig. 2) but this reconstruction, particularly as regards the nature of the roof-trusses, is open to some doubt. In deciding on the type of roof construction to employ, the architect drew upon models of houses having the same ground plan, notably the hogbacks of northern England and a casket from Kammin Cathedral in Pomerania. The Kammin casket (plate) is made of plates of elk horn held together by work of gilded bronze and from its ornamentation Norland concluded that it is probably Danish work of just the same period as Trelleborg. The ridge-tree and wall-plates extend beyond the gables and are terminated by carved animals' heads whilst the projecting ends of the principal rafters are shaped like birds' heads.

The roof-ridges of the hogbacks are almost invariably slightly arched and the roof itself is usually tegulated (fig. 3). Whether the roof patterns represent tiles or shingles

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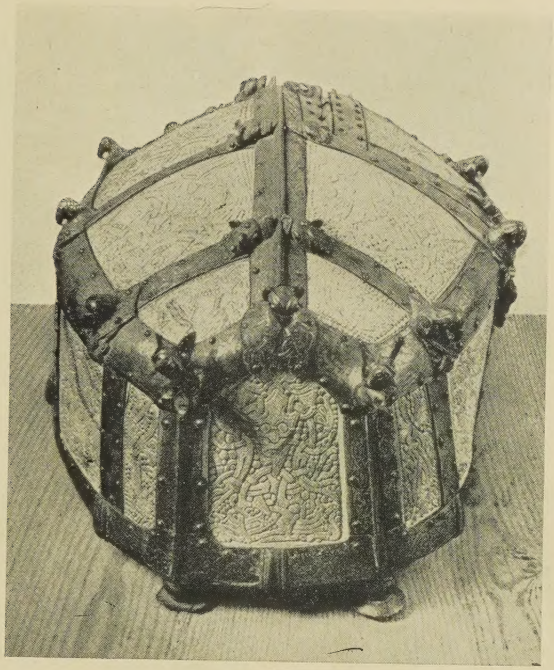
[1] W. G. Collingwood, *Northumbrian Crosses of the Pre-Norman Age*, 1927. 'Anglo-Saxon Sculptured Stones', *Victoria History of the County of York*, vol. II, 1912, pp. 109–33.

I have accepted Collingwood's classification and chronology throughout this paper.

[2] H. J. Fleure and M. Dunlop, ' Glendarragh Circle and Alignments, The Braaid, Isle of Man', *The Antiquaries Journal*, vol. xxii, 1942, pp. 51–2.

[3] Poul Norlund, *Trelleborg*, 1948, p. 28.



THE KAMMIN CASKET
Ph. Danish National Museum, Copenhagen

facing p. 68

it is impossible to determine but in view of the origin of the hogbacks it is probable that they represent shingles such as were employed on Norwegian stave-churches. The use of shingles in Britain is of considerable antiquity. A manuscript illustration of about 1120 depicts a workman nailing shingles at a point below the lap[4] but, as Innocent has pointed out, this may have been an error on the part of the draughtsman[5]. Alexander Neckam, writing in the 12th century, states that a hall may be roofed with straw, rushes, shingles or tiles and in 1260 King Henry III ordered that the thatch on the outer chamber

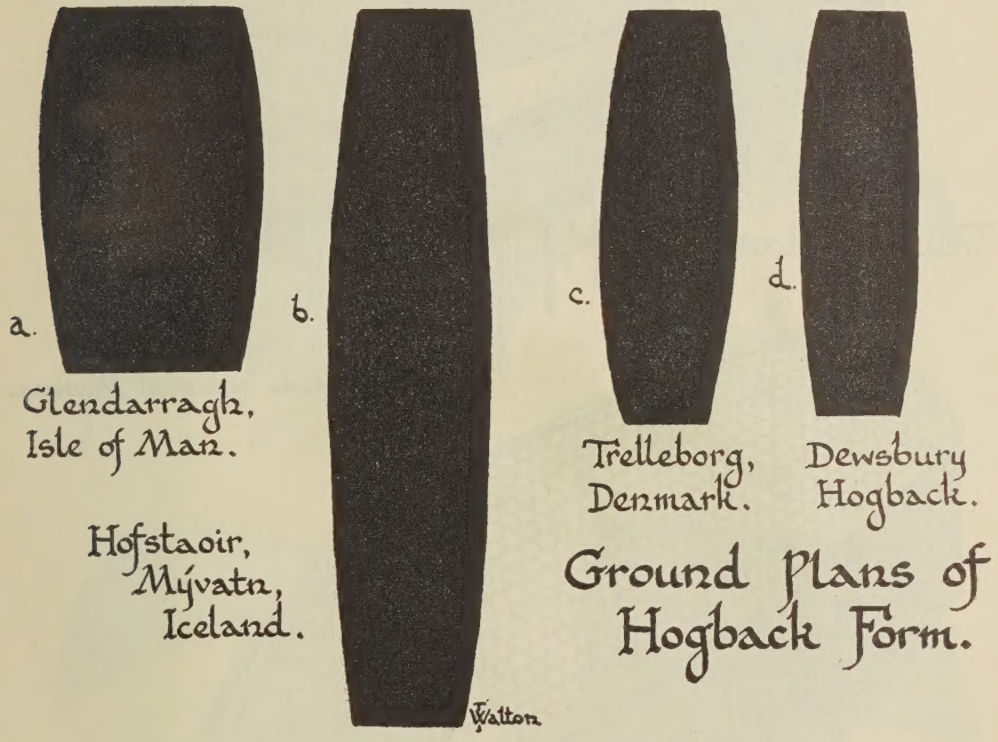


Fig. 1

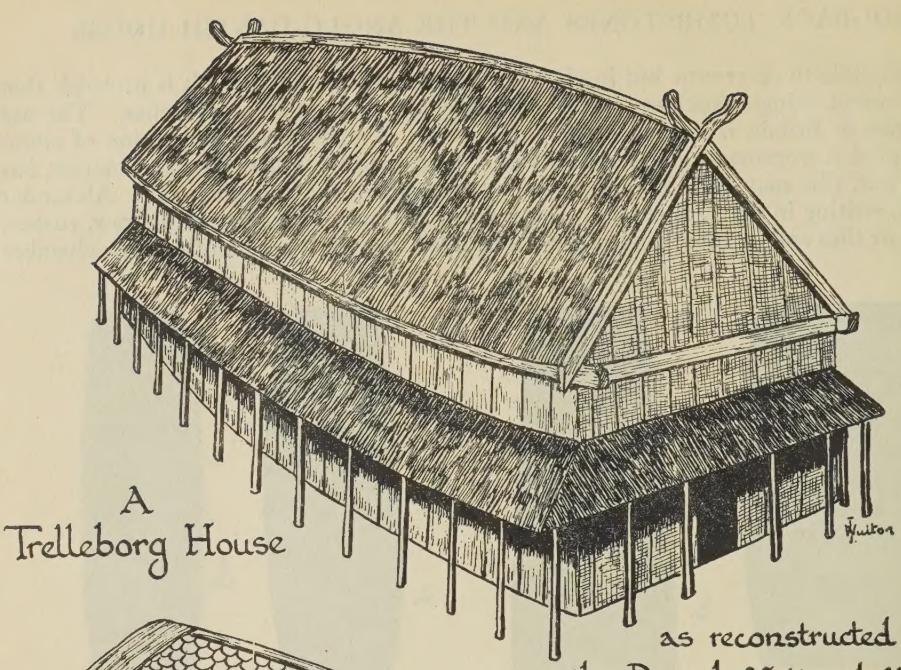
in the tower of Marlborough Castle should be replaced with shingles [6]. Even important buildings in the Middle Ages were so roofed and in 1281 twelve oak trees were sent from Sherwood Forest to the Franciscan Friars of Lincoln for shingles[7] whilst Salisbury Cathedral was similarly roofed from the Bramshaw woods in the New Forest. The

[4] T. H. Turner, *Domestic Architecture in England from the Conquest to the end of the Thirteenth Century*, 1851, facing p. 8.

[5] C. F. Innocent, *The Development of English Building Construction*, 1916.

[6] T. H. Turner, op. cit., p. 251.

[7] C. F. Innocent, op. cit., p. 184.


A
Trelleborg House
as reconstructed by
the Danish National Museum

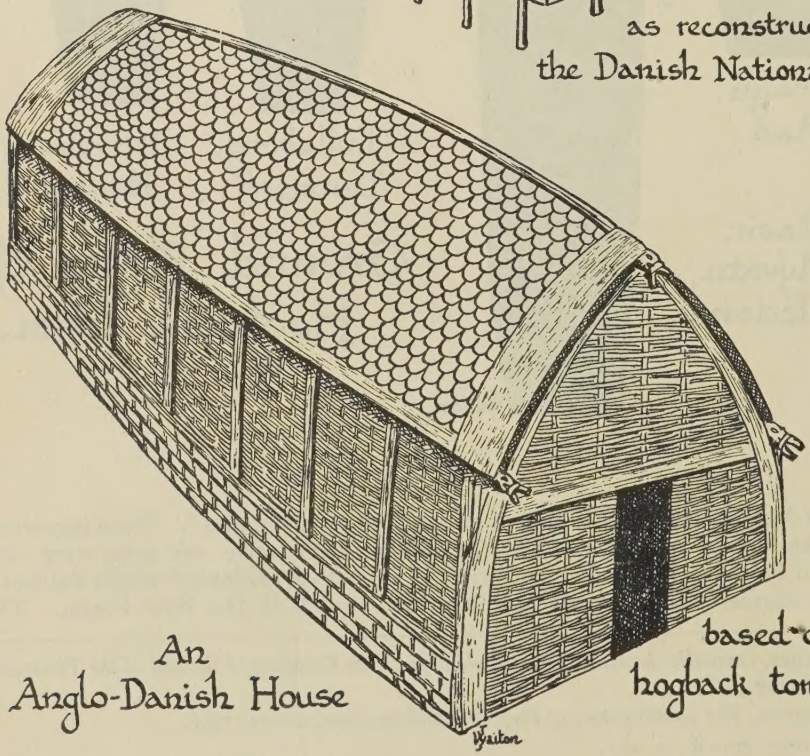
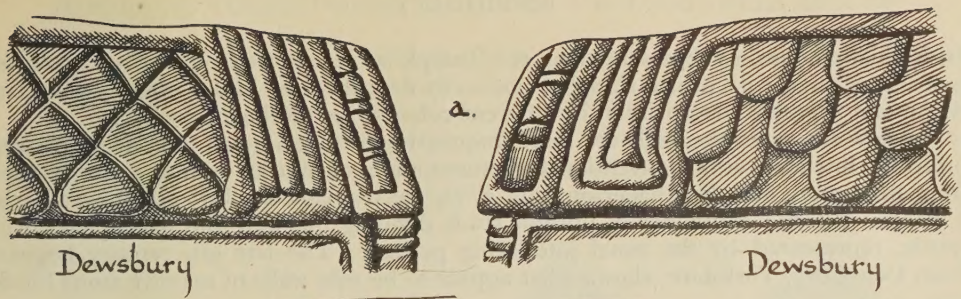
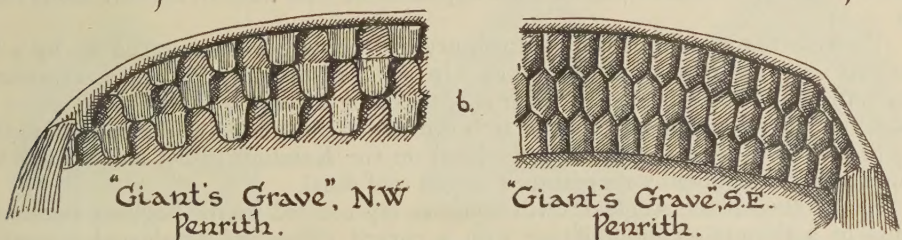
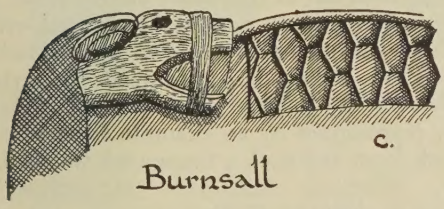

An
Anglo-Danish House
based on the
hogback tombstones

FIG. 2





Hogback Roof Details



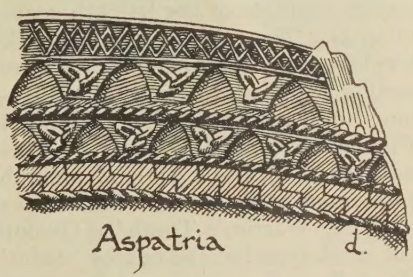


FIG. 3

Irish chief's house, as represented by the Temple at Jerusalem in *The Book of Kells*[8], was also covered with ornate shingles, poetically described as 'birds' wings', which Ian Richmond suggests were painted in different colours like the hogbacks.[9]

Below the eaves the walls are most frequently decorated by an interlacing pattern, probably intended as a conventional representation of wattle walling. An example from Brompton, near Northallerton (FIG. 3, E), clearly depicts a low ground-wall with a wooden cill and a number of upright studs dividing the wall into panels filled with wattle, represented by the usual interlacing pattern. The late 9th century hogback from Dewsbury, Yorkshire, shows what appear to be side walls of massive stone blocks (FIG. 4, A).

Towards the middle of the 10th century the whole gable was taken up by a bear climbing onto the roof-ridge (FIG. 3, E). In some cases only the head is represented (FIG. 3, C) whilst at Easington the bear is replaced by a snake. Collingwood states that it was 'very much in the taste of the 10th century to put a head at the end of anything as a finial'[10]. A similar feature is depicted on the Kammin casket and on the Irish shrines and it undoubtedly represents a carved roof finial.

The picture of the Anglo-Danish house as represented by the hogback tombstones is that of a shingle-roofed building with a curved ridge-tree terminated by animal-headed finials. The side walls consisted of a low stone ground-wall and an upper structure of wide panels formed by a series of upright studs stretching from the cill to the wall-plate and filled with wattle. Although the wattle side walls rested on stone ground-walls the gables were entirely filled with wattle (FIG. 2). That the hogback is a stone replica of a timbered house is supported by Bede's statement that the sepulchre of St. Chad was a wooden monument made like a little house with a roof and a hole in the wall through which people used to put a hand and take some of the dust, valued as medicine.

Hogbacks were known in northern England prior to the Danish invasion, an excellent Anglian example of the late 9th century being preserved in Dewsbury church (FIGS. 3, A and 4, A). The gable of this hogback shows slightly sloping stone walls covered with a shingle roof but it also depicts what are probably a pair of crucks; that is, curved timbers meeting at the apex to carry the ridge-tree[11]. From about A.D. 930 onwards the style of animal drawing changed, producing a type known as 'Jellinge' from the main region of its counterpart in Denmark. This group, represented by an example from Plumbland (FIG. 4, C), has a gable of undoubted cruck form and such a framework was usually represented until the end of the 10th century.

The 'Warrior's Tomb' at Gosforth (FIG. 4, E), dated by Collingwood as *c.* A.D. 1000 is of cruck type but the nearby 'Saint's Tomb', dated some fifty years later, has vertical side walls and an 11th century example of late-Anglian pattern from Ingleby-Arncliffe has a definite king-post truss (FIG. 4, B). Midway through the 11th century, therefore,

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[8] *The Book of Kells* (Trinity College, Dublin).

[9] Ian Richmond, 'The Irish Analogies for the Romano-British Barn Dwelling', *The Journal of Roman Studies*, vol. XXII, 1932, p. 98.

[10] W. G. Collingwood, op. cit., 1927, p. 167.

[11] For descriptions of cruck construction see :—S. O. Addy, *The Evolution of the English House*, 1910; C. F. Innocent, op. cit.; James Walton, *Homesteads of the Yorkshire Dales*, 1947. 'Cruck-framed Buildings in Yorkshire', *Yorks. Arch. Journ.*, 1948, pp. 49–66. 'The Development of the Cruck Framework', ANTIQUITY, 1948, pp. 179–89; Cyril Fox and Lord Raglan, *Monmouthshire Houses*, Part I, 1951; Iorwerth C. Peate, *The Welsh House*, 1940.

the hogbacks indicate that there was a change in the construction of the Anglo-Danish house from cruck-truss to king-post truss.

An interesting sidelight on this change is afforded by the distribution of cruck-trussed buildings in the Colne Valley region of West Yorkshire. Prior to 1069 this area was peopled by Angles and Danes, with an admixture of Norse, sufficiently united to rebel against William the Conqueror. In 1069 William's armies devastated large parts of the

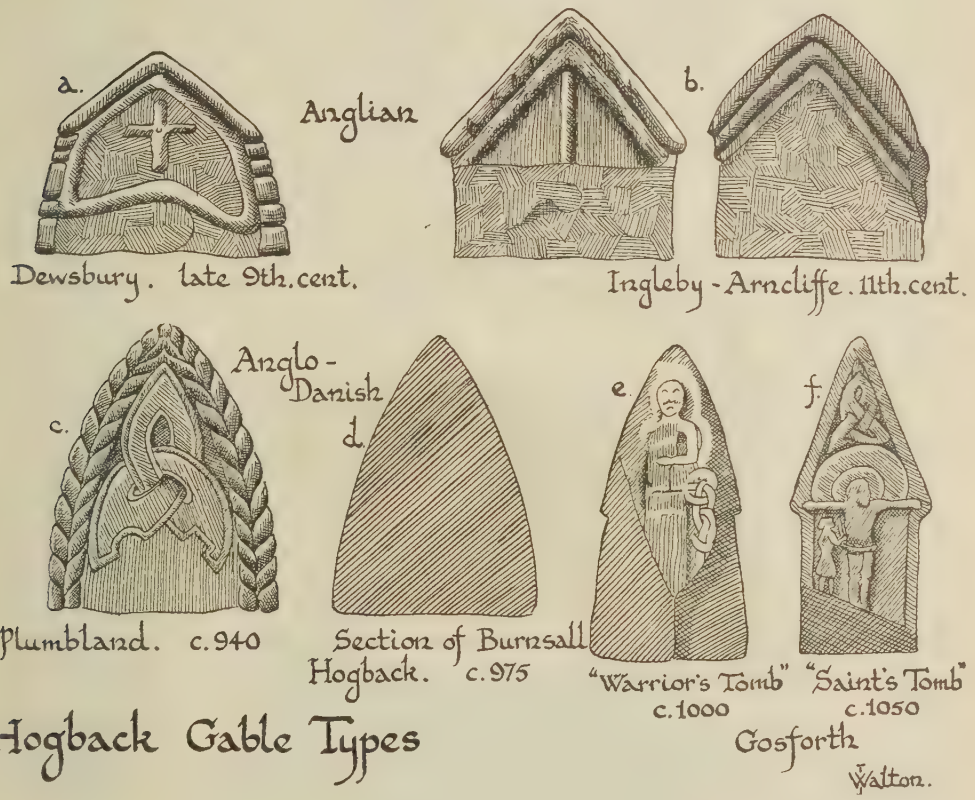

Fig. 4

Colne Valley as a reprisal for this rebellion leaving, however, certain parts unscathed. It is exactly in those parts that cruck construction has survived, notably a tiny pocket at Thorpe, near Almondbury. It would seem that prior to William's devastations the people of this district were living in cruck-trussed houses and that in those parts not laid waste they continued to do so after his armies had gone. The devastated parts remained unoccupied for at least the next seventeen years, ultimately to be re-peopled by Norse settlers from Lancashire and Westmorland[12] who brought with them the king-post

[12] W. G. Collingwood, 'Angles, Danes and Norse in the District of Huddersfield' (*Tolson Memorial Museum Handbook No. 2*), 1929, p. 54.

method of house construction. This change in the Colne Valley occurred almost at the same time as that we have already noted in the form of the hogbacks.

As the Anglo-Danish hogbacks represent cruck-trussed timber dwellings it is probable that this method of building was introduced into Britain by the same peoples. It is unlikely that they would adopt a new method of house construction or accept one which already existed in Britain on their arrival in the new country. Still more unlikely is it that they would employ a new style for their tombstones. In fact such a change did not take place until the 11th century. Historical records throw no light on the origin of cruck construction. The earliest dated English example is the Enstone tithe barn, which was built in 1382, but there is a record of ' two bent beams called " crokkes " ' at Harlech in 1278 and Henblas, Llanderfel, Merioneth, is considered to be early 14th century. All these, however, are developed structures.

The present-day distribution of cruck building in Europe affords a more definite clue as to its origin. Erixon has found evidences of cruck-like construction from Iron Age times in Denmark and Gotland and even from the Stone Age in Sweden and West Germany[13]. Stieren, Ottenjann and Lindner have briefly described true cruck constructions of primitive form still being employed in the German North Sea districts of Hümling, Oldenburg and Stade[14] whilst van Giffen[15] and Trefois have indicated its continuation along the coasts of Holland and Belgium where it has survived only in a modified form[16].

In Britain Innocent's map marks the southern limit of cruck construction as a line drawn from the Wash to the Bristol Channel[17] but this appears to be a generalization which has no foundation in fact. I cannot find a single record of any cruck-trussed building in Lincolnshire, nor in any part of eastern or south-eastern England. On the other hand cruck construction definitely extends into Hampshire and Dorset and, in a modified form, into Somerset and Devon (FIG. 5). I have no record of cruck building north of the Tees but there are frequent references to the use of the word ' sile ' in Durham, Northumberland and Scotland and ' sile ' is usually regarded as a north country equivalent of ' cruck '. This is not definitely proven, however, and it may equally well, from the contexts in which the word is used, refer to a normal roof couple. Roof trusses of cruck form have also been described from Caithness but these would appear to be a direct Scandinavian influence not connected with the true cruck of England and Wales.

The entire absence of cruck construction from eastern and south-eastern England has been explained by assuming that it was pushed into the north and west by other later methods. It is difficult to believe that not one single example, nor even a record of one, would not have survived and it seems much more probable that the people who introduced and followed the cruck method of building were never resident in eastern England.

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[13] Sigurd Erixon, ' Geschichte und heutige Aufgaben der Bauernhausforschung ', in Funkenberg : *Haus und Hof im nordischen Raum*, II Band, 1937.

[14] W. Lindner, *Das niedersächsische Bauernhaus in Deutschland und Holland*, 1912 ; A. Stieren, ' Eine germanische Siedlung in Westick bei Kamen, Kr. Unna, Westf., Die bisher ergrabenen Bauten der Siedlung', *Westfalen*, 1936.

[15] Verbal communication from van Giffen to A. Stieren.

[16] Cl. V. Trefois, in *Folk, Zeitschrift des Internationalen Verbandes für Volksforschung*, I, Heft, 1937.

[17] C. F. Innocent, op. cit.

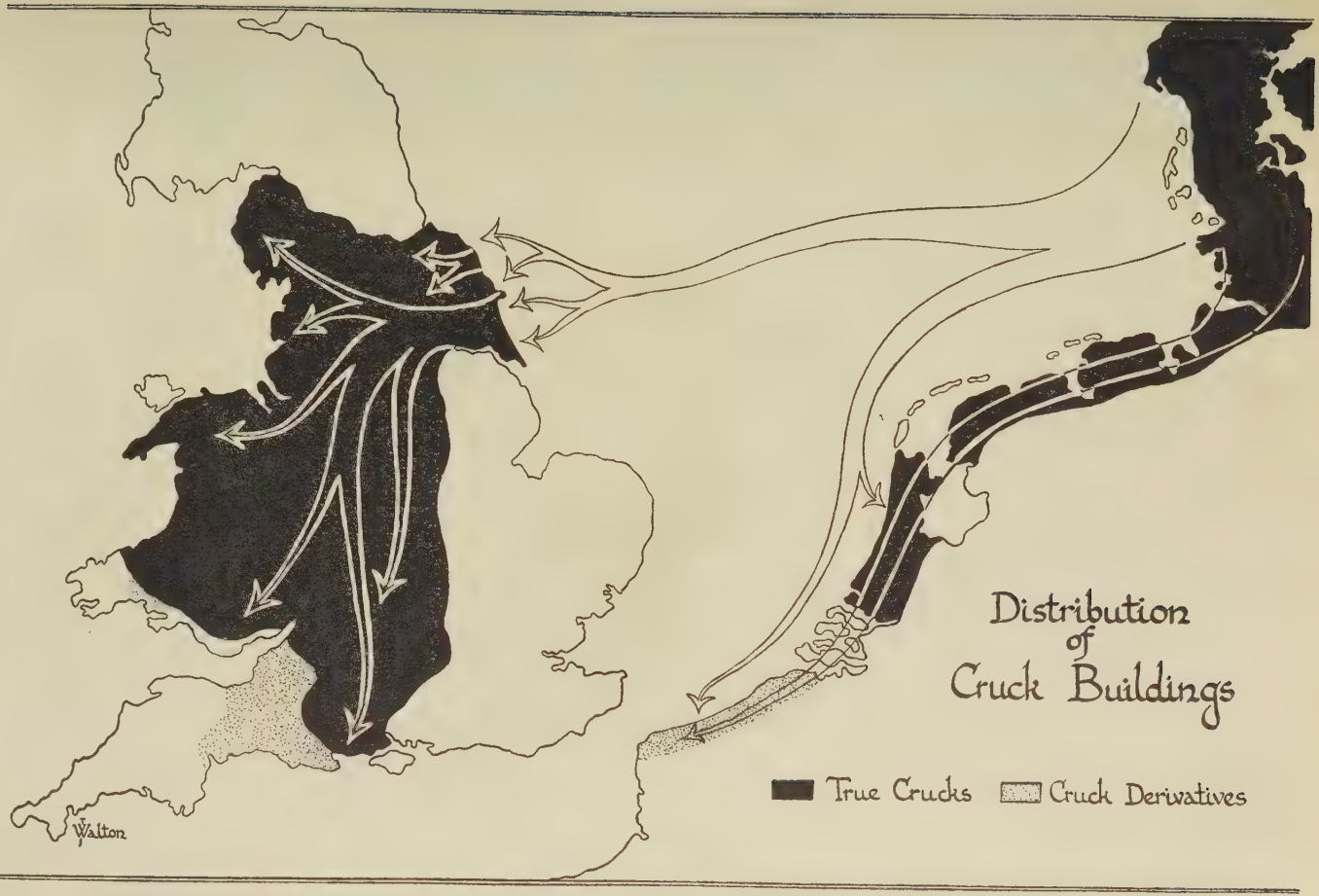
Distribution
of
Cruck Buildings
True Crucks
Cruck Derivatives
J. Walton

Fig. 5

The distribution of cruck buildings in Europe and Britain suggests an origin in the Schleswig region of southern Denmark and north Germany from where it travelled in one direction along the North Sea coast to Flanders and in another across the North Sea to the Yorkshire coast. Eventually it spread westwards to Cumberland and Westmorland and south-west as far as Hampshire and Dorset. The termination of each branch is marked by a modified cruck form due to contact with other methods and this modification is particularly marked in Devon and Somerset, in south-west Wales and in Flanders.

The available evidence afforded by the hogbacks and the known distribution of cruck construction in Europe indicates that originally the cruck method of house building was widely distributed throughout Denmark, south Sweden and north-west Germany but by the 5th century it had generally been replaced by the paired-couple and king-post truss constructions. The cruck-truss only survived in certain localized areas, which could not have included Jutland, Angeln or Holstein otherwise cruck construction would have been found in the eastern parts of England which these peoples occupied. Its source of origin must, however, lie within the Anglian sphere of influence, as is proved by the Anglo-Danish hogbacks. The area which fulfils these conditions is that part of Schleswig north or east of Angeln. There in the 5th century must have lived tribes who retained the cruck truss after it had been abandoned in adjoining areas but who had other cultural features in common with their neighbours. These tribes at the very beginning of the 6th century reached the Yorkshire coast, occupying the slopes around the edges of the Clevelands Hills, the North and South Wolds and the Vale of York, where they built their cruck-trussed dwellings. From there they spread westwards along the tributaries of the Ouse and south-westwards down the Trent valley. They continued to build cruck-trussed dwellings until the middle of the 11th century when they adopted the king-post truss but cruck construction has continued almost up to the present time in those areas which they culturally influenced.

I realize that to reach such a conclusion on the evidence of only two cultural features is open to error but Collingwood, from very different evidence, has concluded that the Anglian settlers of the Yorkshire coast came from the south of Denmark[18]. Other aspects of culture also confirm that there was no absolute uniformity throughout the Anglian group and, as Myres has pointed out, ' regional differences do exist between different parts ' some of which ' reflect contemporary fashions in different parts of the continental homeland '[19]. There is, therefore, no reason why the Anglian or Anglo-Danish settlers of the north and west should not have retained a type of dwelling different from that of allied tribes in eastern England. Significant in this connection is the fact that the eastern boundary of cruck construction in England coincides with the western limit of the paired-couple roof construction which replaced the cruck-truss in Schleswig-Holstein.

When I first suggested a possible Danish origin of the cruck truss[20] Mrs Piggott kindly drew my attention to a number of examples from Hampshire, Wiltshire and Dorset and pointed out that these would be difficult to correlate with a Danish sphere of influence. In his review of Ekwall's *Concise Oxford Dictionary of English Place-Names* Crawford referred to the origin of the place-name Thruxton, in Hampshire, which is identified as ' Thurkil's tun'. This personal name is Danish and Crawford pointed out

[18] W. G. Collingwood, op. cit., 1929, p. 8.

[19] J. N. L. Myres, ' The Adventus Saxonum', *Aspects of Archaeology in Britain and Beyond*, 1951, pp. 235–6.

[20] James Walton, op. cit., 1948, p. 188.

that ' there is in the village a rectangular enclosure with a mound in one corner, of a type quite common within the Danelaw ' and that ' it is reasonable to conclude that this was the actual *tun* of Thurkil '[21]. Thruxton is situated in the western part of Hampshire, in the region where cruck buildings occur, so that the existence of a cruck tradition beyond the normally accepted Anglian and Danish territories does not preclude an Anglo-Danish origin.

In preparing this paper I owe much to Mr N. Teulon Porter, Mr T. W. French, Sir Cyril Fox, Mr V. R. Webster, Mr O. G. S. Crawford and many others who have, over a number of years, kept me continually informed of any new records of cruck construction which they have found. It is on these records, together with my own, that I have based my map of cruck distribution in Britain. I am also particularly indebted to Herr Heinrich Koppold who has supplied me with records and literature of European cruck construction which has not previously been recognized by English students of folk building.

[21] O. G. S. Crawford, review of Eilert Ekwall : ' The Concise Oxford Dictionary of English Place-Names ', ANTIQUITY, 1936, p. 493.

Caravan Traffic across Asia

by W. C. Brice

THE main routes of commerce into Asia beyond the frontiers of the Roman Empire are now well charted, thanks to many vindications of the reliability of Ptolemy[1], and to the archaeological work of Sir Aurel Stein in the deserts of Central Asia and North Arabia[2]. However, little is still known about the administration of this commerce. The classical geographers give very few hints on such questions as who organized and who travelled with the caravans ; where were the stages on the route, and how the goods were handed over at each stage ; whether currency or barter was used ; and what arrangements were made for the security of the traffic.

What follows is an attempt to collect the scanty information on these questions in classical sources, and to compare it with what is known about the organization of caravan trade in Asia in medieval and later times. Commerce along three main routes will be considered, the overland trade route from the Aegean to India, outlined by Strabo (after Artemidorus)[3] and Isidore of Charax[4], the Arabian spice road, and the silk road to China.

The method of commerce along the India route in classical times is best known on its Anatolian section. Unlike the Royal Road across the northern plateau, which was organized in Achaemenid times as a strategic and administrative link of empire[5], with carefully kept post stages, the Great Eastern Trade Route, as Radet showed[6], only functioned as a highway of commerce across Anatolia from Seleucid times onwards. It linked a series of municipalities which were places of industry (like Laodicaea), religious centres (such as Antioch of Pisidia), and sometimes also sanctuary cities (Ephesus).

These cities, with their elaborate municipal organization, were dependent economically and politically on safe communications on the roads between them. It is not known how these roads were garrisoned, but there is a clue to the way in which a traveller was received in the cities. There is a series of inscriptions near Pisidian Antioch which refer to the ' Guest-friends who use the Sign ' (*Xenoi Tekmoreioi*). From these and similar inscriptions at Hierapolis, it appears that these societies were trade-guilds united under religious forms, which contributed to a common treasury, financed the construction of works of architecture and sculpture, and, to judge from their title of *Xenoi*, held as one of their duties the obligation of hospitality to travellers[7]. From the places of these inscriptions, it seems probable that this institution was old Anatolian rather than Graeco-Roman, and like many other indigenous customs and institutions, it appears to have survived locally from Hellenistic into Islamic times. For when Ibn Batuta passed through Anatolia in A.D. 1333, he was liberally entertained on this same route at Ladikh and Konia, and also at Burdur and Antalia, by brotherhoods of youths, each of which kept

[1] Vidal de la Blache : ' Voies de communication dans la Géographie de Ptolémie ', *Acad. des Inscr. et Belles-Lettres*, 1896, p. 456.

[2] *On Ancient Central-Asian Tracks*, London, 1933. ' The ancient trade-route past Hatra and its Roman posts ', *Journ. Roy. Asiatic Soc.*, 1941, p. 299.

[3] XIV, II, 29.

[4] *Mansiones Parthicae*, in C. Mullerus, *Geogr. Graec. Minores*, Paris, 1855, I, pp. 244–56.

[5] Hdt. V, 52.

[6] *La Lydie et le Monde Grec* . . . (Écoles franç. d'Athènes et de Rome, no. 63, 1893).

[7] W. M. Ramsay : *Hist. Geogr. of Asia Minor*, London, 1890, pp. 409–11.

a cell with stores of food for the entertainment of travellers, under the charge of a leader[8]. These brotherhoods were apparently recruited each from a separate guild, and such guilds in the world of Islam were closely linked with the different dervish orders, and employed rituals of religious form[9].

There is, therefore, a close resemblance between the guest-friends of the Hellenistic cities and the communities of ' brothers ' mentioned by Ibn Batuta, and it seems that at both periods merchants found hospitality and protection at their hands. Of course, these trade-guilds would have a professional interest in making travelling easy and comfortable for traders ; but their generosity as recorded by Ibn Batuta appears disinterested enough. There seems, indeed, to have been a strong local tradition of hospitality to travellers, and it is significant that the legend of Philemon and Baucis is set in Phrygia.

The French jewel-merchant, Tavernier, travelling through Anatolia in the 17th century, records instances in his day of customs which aided the comfort and security of caravan traffic[10]. He stayed in caravanserais endowed with pious bequests, whose foundation was a privilege reserved for the mother and sisters of the Sultan and for viziers and pashas who had campaigned three times against the Christians. Along the road, water was taken from cisterns, which in time of drought were replenished by people from nearby villages[11].

According to Tavernier, the merchants formed themselves into a caravan for a certain agreed distance, and he had to join several at different stages of his journeys to India. The caravan moved along the road as a temporary but self-contained small community, with its own rules and institutions. The merchants, each of whom provided or hired his own transport, elected from among their number a *caravan bashi* or leader, who decided on the routes and distances of each day's—or more usually each night's—journey, and judged disputes with the help of senior members of the caravan. *Chaushes* or guards were hired for the journey, and each traveller contributed to their pay in proportion to the amount of his merchandise. In the caravanserais, rooms were allotted without distinction of rich and poor, usually free in the endowed stations in the country, or at a small charge in the towns. When the caravan had entered, the keeper locked the gate, and was responsible for the safety of the company so long as it stayed there. Imposts (*kharadj*) were levied on the goods at various cities along the way. These appear to have been local exactions in both Turkey and Persia, where the government provided remounts on the main post-roads, but did little to aid the ordinary slow caravan traffic. The caravanserais were privately endowed or self-supporting, and the so-called guardians of the route (*tufangehis*) were usually little better than self-appointed bodyguards whose unwelcome attention had to be bought off as cheaply and quickly as possible[12]. In these countries, the caravans appear to have been, at least in medieval and later times, largely self-reliant for their organization and protection, and Tavernier's experiences to this effect are confirmed by Tournefort[13] and Ferrier[14]. Clavijo, too, remarks of the route past the castle of Cadaca in Armenia, ' this road is not used, except

[8] *Travels*, Chap. xi (Transl. S. Lee, 1829 ; H. A. R. Gibb, 1939).

[9] H. A. R. Gibb and H. Bowen : *Islamic Society and the West*, i, Oxf., 1950, pp. 281–95.

[10] *Les Six Voyages de J-B. Tavernier* . . ., Paris, 1681 ; Bk. i, Chap. 10, ' Des caravanserais et de la police des caravanes '.

[11] Tavernier, op. cit., Bk. i, Chap. vii.

[12] F. B. Bradley-Birt : *Through Persia*, London, 1909, p. 56.

[13] Pitton de Tournefort : *Relation d'un voyage au Levant*, Amst., 1718.

[14] J. P. Ferrier : *Caravan journeys and wanderings* . . ., London, 1856.

when many merchants travel together, and give a great present to the lord of this land, and to his men'[15]; and in the early 17th century, Benedict Goës, travelling northwards through the Himalayas from Agra, joined caravans which united for common defence under an appointed chief[16].

In early Arabia, by contrast, the local rulers played a much more important part in the administration of the traffic. Each tribe seems to have had the right to conduct, or at least to control, the commerce through its own territory. Strabo, speaking of the spice traffic from the Yemen, says[17], ' The people who live near each other receive, in continued succession, the loads (of perfumes) and deliver them to others, who convey them as far as Syria and Mesopotamia '. Pliny adds[18] that all the frankincense, after being collected, was brought through the Sabaean kingdom along a single road, to deviate from which was a capital offence. All the traffic was thus compelled to pass through Sabota, where a tithe of the merchandise was confiscated by the priests of the local deity, Sabis, to help defray his public expenses, particularly those of hospitality, ' for the divinity generously entertains all those strangers who have made a certain number of days' journey in coming thither '. Naturally, as Pliny remarks, the price of the frankincense had soared very high by the time it reached the Mediterranean, as a result of the many expenses and exactions on the way.

On a recent journey in South Arabia, W. H. Ingrams had experience of a system of caravan travel very reminiscent of that described by Strabo and Pliny. Speaking of the roads inland from Mukalla, he says[19], ' Each route is recognized as worked only by a particular tribe, and no tribe would dream of using another's route '. Arrangements for travel are made through a broker, who knows the customary charges for the hire of transport and servants, and who represents the tribe along whose route the caravan is to pass.

If the traveller and his party wish to carry on through the territory of another tribe, they have to hire from that tribe the services of a *siyar* or hostage, whose presence will be a strong guarantee of their safety. Doughty had regularly to employ such a person, whom he calls a *rafik*, on his journeys in the Hejaz[20]. William Beawes, crossing the desert of North Syria from Aleppo to Basra in the 18th century[21], found that he had not only to hire the services of a *caravan bashi* as was customary in Anatolia and Persia (' a man ', he says, ' of extraordinary note among the Desert Arabs in general '), but also *rafiks*, on the Arabian system. He remarks, ' But although this man (the *caravan bashi*) is principally necessary for the security of the caravan, he is not absolutely sufficient, for we have also several others of different tribes, who likewise receive a gratuity for their protection ; and this expense amounts to the merchants in the whole, from Aleppo to Bassora, to about (14) fourteen dollars each load '.

In Arabia, as in Anatolia and Persia, the provision of hospitality for the convenience and protection of travellers seems to have been regarded as a pious duty. Ingrams

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[15] *Narrative of the embassy of Ruy Gonzalez de Clavijo* . . ., transl. by C. R. Markham, London (Hakluyt Soc.), 1859, pp. 65–6.

[16] Col. Sir Henry Yule : *Cathay and the Way Thither*, IV, London (Hakl. Soc., N.S. XLI), 1916.

[17] XVI, IV, 19. [18] XII, 30–2. [19] ' Hadramaut ', *Geog. Journ.*, 88 (1936), p. 524.

[20] ' The Arabian rafik, often an enemy, is a paid brother-of-the-road, that for a modest fee takes upon him to quit the convoy from all hostile question and encounter of his own tribesmen. Thus Arabian wayfarers may ride with little dread through hostile marches, and be received even to their enemies' hospitality '. C. M. Doughty : *Wanderings in Arabia*, London, 1926, p. 86.

[21] *The Desert Route to India*, 1745–51, ed. D. Carruthers, London (Hakl. Soc.), 1929, p. 13.

mentions[22] that travel in the Hadramaut is greatly aided by the public fountains near villages (*siqayas*) and by the rest-houses (*muraba'as*) which are provided at regular intervals along the roads. His description of the fountains and the responsibility for them is almost identical with that by Tavernier of the roadside cisterns of Central Anatolia and their upkeep. ' *Siqayas* ', says Ingrams, ' are usually endowed, and it is the duty of someone in the village near which they stand to keep them filled with water for the benefit of thirsty travellers. *Muraba'as* are built mostly by wealthy merchants to afford the traveller shelter from the sun during his midday halt and rest and security at night. There are also in many places graves of saints at which travellers may leave their property under the protection of the saint until they wish to reclaim it. The system works very much like railway left-luggage offices, but there are no fees to pay '.

ANCIENT CARAVAN ROUTES ACROSS ASIA

This last custom, very remarkable in a country where the *razzia* is such an everyday occurrence, must have been of considerable help to traders in Arabia. Doughty also speaks of the inviolability of goods left by the highway[23]. He saw in Sinai a cloak left hanging for safety by the side of the road, and remarks that inland from Gaza merchants each year abandon their surplus goods in roadside storehouses, with confidence that they will not be tampered with before they return the following season. This regard for the safety of property left by the wayside may be connected with the feeling, widespread in the Middle East, of the impiety of killing a person on the highway. In India it was a rule of Frontier warfare, respected by both sides, that an enemy would not be shot at so long as he kept to the main road ; and according to Doughty[24], the Solubbies, itinerant bands of tinkers and veterinary surgeons who wander the roads of northern Nejd, are regarded by all the Beduin as immune from attack.

Another method of securing the safety of travel is described by Doughty along the *Derb-el-Haj* (Pilgrim Road)[25], which follows the northern section of the ancient Spice

[22] op. cit., p. 530.
[23] *Wanderings in Arabia*, p. 121.
[24] op. cit., pp. 122–3.
[25] op. cit., p. 10.

Road. Caravanserais at distances of a day's march were garrisoned by Turkish soldiers, and their immunity from attack, together with that of the caravans on the intervening roads, was purchased by the Ottoman government with regular subventions (*surras*) to the tribe in whose land they lay. This arrangement, an elaborate form of blackmail, rested on the same premise as the other Arabian systems of organizing travel, that each tribe has the right to control the section of the road which passes through its territory.

Just as the spices of ancient Arabia went through the hands of various intermediaries in their seventy days' journey from the Yemen to Aqaba, so the silk traffic from China seems to have passed through several stages on its way to the Mediterranean. In the 14th century, Pegolotti, agent for a firm of Florentine merchants, described how the China trade moved in stages[26]. Linens brought from Italy were sold at Organci for silver, and this in turn was exchanged in China for paper money, which could be used to buy silk. Much earlier, Ammianus Marcellinus described the ' dumb barter ' between the silk merchants from the east and Mediterranean traders[27], presumably at Stone Tower in the Pamirs[28]. This was the furthest point on the Silk Road for which Ptolemy had direct information, which he owed to Marinus' record of the story of the agents of the Macedonian merchant Maes Titianus[29]. It is doubtful whether even here the silk merchants were true Chinese. According to Chinese records, the Asi (probably Parthians) were intermediaries in the silk trade in the 1st century B.C.[30], while in the 2nd century A.D. the Sacae (Huns) are known to have exchanged their horses for silks on the Chinese border[31]. Late in the 6th century, the Byzantine court sent ambassadors to arrange for the traffic of silk through the intermediary of Turkish tribes[32].

Pliny speaks of the reluctance of the Chinese to trade beyond their own frontier[33], ' The Seres . . . shun all intercourse with the rest of mankind, and await the approach of those who wish to traffic with them ' ; and Ammianus characterizes the same nation as ' vitantes reliquorum mortalium coetus '[34]. In medieval times, too, most of the Chinese trade seems to have been carried over the frontier by foreign merchants. Polo says that in the suburbs of the great emporium of Cambaluc (Peking) each nation of merchants had its own hostelry (*fondaco*)[35]. In the 15th century, a Tatar ambassador to Cathay told Josafa Barbaro in Tana about the trade in Cambaluc, ' wheare ', he says, ' he was honorably receaued, and lodging appoincted vnto him. And (as he said) even so the costes arr borne of all the merchants that passe that waie '[36]. Speaking of trade between China and Turkestan in the middle of the last century, Vámbéry remarked[37], ' The Chinese seldom set foot over the frontier, the communication here being entirely kept up by Kalmucks and Musselmans '. Lattimore, who has travelled recently in Central Asia, says that his caravaneers were of a mixed stock, distinct both from the true Chinese, and from the local nomadic folk[38]. They conduct all the trade along a certain

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[26] Balducci Pegolotti : *La pratica della mercatura*, Lisbon and Lucca, 1766. (Quoted in part in Yule's *Cathay and the Way Thither*, III, London (Hakl. Soc.), 1914.

[27] XXIII, 6, 68. [28] XXIII, 6, 60. [29] I, 11, 6.

[30] H. Yule : *Cathay and the Way Thither*, I (1913), §19.

[31] Kondakof-Tolstoï-Reinach : *Antiquités de la Russe méridionale*, Paris, 1891, p. 327.

[32] Menander Protector, in Müller's *Fragmenta Histor. Graec.*, IV, p. 235. (Quoted in part in Yule's *Cathay and the Way Thither*, I, suppl. note VIII).

[33] VI, 20. [34] XXIII, 6, 68. [35] Bk. II, Chap. XXII.

[36] *Travels of Josafa Barbaro*, ed. Lord Stanley of Alderley, London (Hakl. Soc.), 1873, p. 75.

[37] A. Vámbéry, *Travels in Central Asia*, London, 1864, p. 429.

[38] ' Caravan routes of Inner Asia ', *Geog. Journ.*, 72 (1928), pp. 501–4.

part of the route, and spend their time moving from one end to another of this stretch. When on the march, a 'rule of the caravan' obtains, a set of laws and conventions by which this small mobile community must abide. These include a taboo on camel flesh, and the propitiation of local spirits. This last was a constant concern of the caravaneer. The group to which he belonged was moving in strange and menacing surroundings, and the evil spirits of the desert in particular were always ready to inveigle the unwary traveller[39].

Sir Aurel Stein found regular watch-towers and remains of a defensive wall built by the Chinese in the 1st century B.C. to protect the Silk Road as far west as the Jade Gate in the Tun-huang oasis[40]; but westward from here we know nothing of how the route was administered and garrisoned in antiquity. There is, however, evidence about the upkeep of the trade routes of Central Asia in medieval times. The Mongol emperor, who wielded a very direct and autocratic control throughout his kingdom by a delegation of command on a military basis, obliged each local chieftain to provision and protect post-stations on those roads which passed through his territory. The first purpose of this post-road system was strategic, and Friar Odoric described how the emperor was kept informed post-haste of happenings in every part of his domains[41]. Carpini says that, in addition to victualling the emperor's own messengers, the local commanders had to aid foreign envoys[42], 'In like sort, from what country soever tribute-payers, or ambassadors come unto him, they must have horses, carriages, and expenses allowed them'; and in the year 1403, the Spanish ambassador Clavijo, travelling to the court of Timur, used the post-road from Tabriz to Samarcand, and described the highly efficient organization of the remounts[43]. Carpini, however, complained that unless he could offer gifts, the traveller would usually find the hospitality of the local 'dukes' rather niggardly, as he himself discovered at the courts of Corrensa and of Prince Bathy[44]. Rubruquis also took various luxury goods from Constantinople to present to the governors of Soldaia, 'because they look favourably upon no man which cometh with an empty hand'[45].

Despite the inconvenience of these unofficial tributes, the system was successful in making diplomatic travel safe through the dominions of the Great Khan, as was proved by the journeys of Polo, the Franciscan friars and Clavijo. Further, Juvayni, the chronicler of Mangu Khan, describes the organization of traffic in Ghengiz Khan's empire, and shows that it worked to the benefit of trading caravans as well as post messengers and foreign ambassadors, 'Again, when the extent of their territories became broad and vast and important events fell out, it became essential to ascertain the activities of their enemies, and it was also necessary to transport goods from the West to the East and from the Far East to the West. Therefore throughout the length and breadth of the land they established post-houses (*yams*), and made arrangements for the upkeep and expenses of each *yam*, assigning thereto a fixed number of men and beasts as well as

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[39] Marco Polo, Bk. I, Chap. XXXIX.

[40] *On Ancient Central-Asian Tracks*, p. 189.

[41] *The Journal of Friar Odoric* (1330) (in R. Hakluyt's *Principal Navigations, etc.*, London, 1598–1600), Chap. XIII.

[42] *The Voyage of Johannes de Plano Carpini* (1246), (in Hakluyt, op. cit.), Chap. XIV.

[43] Markham's *Clavijo*, op. cit., p. 90.

[44] op. cit., Chaps. XXI–XXII.

[45] *The Journal of Friar William de Rubruquis* (1253) (in Hakluyt, op. cit.), Chap. I.

food, drink and other necessities. All this they shared out among the *tümäns* (groups of 10,000), each two *tümäns* having to supply one *yam* '[46].

The evidence is fairly conclusive, therefore, that caravan commerce along the great trade-routes of Asia traditionally moved by stages, and usually changed hands at the end of each stage. The customary stages over which a single caravan was organized were longer on the Chinese and Indian routes than on those through Arabia, but even there it was very rare for a traveller to make the complete journey in company with the merchandise from one end of the road to the other. The achievement of the agents of Maes Titianus in travelling as far as the Pamirs clearly appeared to Marinus and Ptolemy as a unique example of enterprise. In later times, the Nestorian missionaries and Franciscan emissaries had special reasons for travelling through Mongolia, and it was an accident of war that originally brought the Polos so far east.

The system of control and organization of caravan trade seems to have varied on the different routes. In Anatolia and Persia there was no organized garrisoning of the route except along a few post-roads, and the merchants had to rely largely on their own powers for their safety and resistance to the arbitrary impositions of local tyrants. In Arabia, however, in both ancient and modern times, each tribe either conducted the traffic through its territory, or controlled and protected it according to a recognized system of charges or of hiring hostages. In Central Asia, in medieval and possibly too in ancient times, the upkeep and defence of the road was a duty imposed on the local nomadic chiefs by the autocratic head of a very centralized and tightly organized empire, which had much to gain, both diplomatically and economically, from the free flow of trade through its territory.

The relations between the traveller and the local inhabitants were often controlled by an elaborate code of hospitable behaviour, which varied in detail from place to place, but which must in many loosely administered districts have helped to ensure the safety of the merchant and his goods.

The internal administration of the caravan was a matter of local arrangement, but its rules were usually strict and disobedience swiftly punished. Although a very impermanent and artificial community, the caravan had to function smoothly for as long as it lasted, for the sake of its own safety.

These clues to the traditions of caravan trade in Asia help to explain why commerce continued for so long to be flourishing and safe beyond the bounds of the Roman Empire, even in times of stress along the frontier ; and also why, although goods flowed freely between the civilizations of Further Asia and the Mediterranean, there was so little exchange between them of information, ideas and inventions. For six centuries after silk was first trafficked into the Roman world, the mystery of its origin remained unsolved, and the failure of Aelius Gallus' Arabian expedition in the reign of Augustus was due to profound ignorance of the geography of the Spice Road. This is just what would be expected if the commerce was carried on by a series of middlemen, who had a vested interest in keeping the producer's secrets from the consumer, and in magnifying reports of the rarity and value of the goods they dealt in ; hence such fantasies as the ant-gold of India[47], and the Golconda diamonds recovered from eagles' nests[48]. Herodotus remarks significantly that Αἱ ὀ' εσχατιαί κως τῆς οἰκουμένης τὰ κάλλιστα ἔλαχον[49].

[46] *The History of the World-Conqueror*, by 'Ala ad-Din 'Ata Malik Juvayni, translated from the text of Mirza Muhammad Qazvini by Dr J. A. Boyle, typescript p. 35. Compare Marco Polo's account (Bk. II, Chap. XXVI) of the upkeep of the imperial post-roads of China.

[47] Hdt. III, 102–5. [48] Marco Polo, Bk. III, Chap. XIX. [49] III, 106.

Pitfalls in Prehistory*

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I HAVE been repeatedly asked to record a few of the more picturesque pitfalls or potential pitfalls I have encountered in my fieldwork. In attempting to do so, I have selected examples which, although they deal with entirely recent events, reflect the kind of thing that has undoubtedly gone on in one form or another from time immemorial. Where they have no direct bearing on prehistory, they have a bearing on the general background of all archaeological fieldwork. Their picturesqueness neither hides, nor does it dull, the lessons they contain ; rather the opposite, for the warnings within them need to be taken into account by all who work in the field. In some, the value is psychological as much as archaeological.

There is little in prehistory that provides a greater problem than that which the Abbé Breuil calls a ' travelling piece '—that is a piece collected on one site and deliberately transported to another. We have repeatedly found that men who lived on or near the bank of a river during the Later Stone Age gathered material for their tools in the river-bed where, as likely as not, the stones they collected were derived from an implement-bearing deposit of the Middle or even the Earlier Stone Age. In this way, Stone Age man could, and indeed often did, transport a millennia- or million-year-old artifact up from one geological horizon to another often very appreciably higher and therefore later. I have frequently found Old Palaeolithic bifaced tools, such as hand-axes, used as cores or fabricators on Upper Palaeolithic ' living floors ' ; and I have traced the ' floor ' of the handaxes to a deep-buried aggradation in the vicinity. To the trained eye, this particular pitfall is made apparent by the different physical appearances of the old and the new, or by double patination on the transported and re-used pieces, but in some cases it is by no means easy to distinguish between them and so to avoid the trap—a trap that is particularly dangerous where we have a living-floor on a bed of clay that overlies another living-floor below the clay. In such a case, the imperviousness of the clay to surface water can cause the implements that occur on the clay to weather much more rapidly than those that lie below it. And if in the first instance the deep-buried implements were covered before they had become appreciably weathered either by incrustation or by abrasion or rolling, we can, and actually do, find that the later, more superficial specimens are much more heavily weathered and altered and look very much older than do the more protected specimens that underlie them. In such a case, a recently derived piece transported from the lower to the upper deposit may actually appear more recent than its new bed-fellows.

And that which men did in the Stone Age they still do! There is in our midst the thoughtless field-worker who will take material he has gathered in the bed of a stream up on to the bank for examination and sorting prior to his final selection of pieces—and leave his discards on the bank ; on an entirely different geological horizon from that on which they naturally occur. The practice is unfortunately not at all unusual, and in the name of posterity it cannot be sufficiently condemned. Pitfalls are plentiful enough

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in all conscience ; it is not only thoughtless, but entirely purposeless, to add to their numbers. I must therefore remind my readers that as long ago as 1604 Friar Bacon said in his ' Prophesie ' : ' Now pitfalls are so made that small birdes cannot know them '—a truism in which we possibly also have the reason why ' small birdes ' continue to make them.

We also have the case of pebbles originally broken and chipped or flaked by glacial action during Carboniferous times occurring in the same deposits and literally side by side with pebbles artificially shaped by man during the earlier stages of the Quaternary Age. Many of these naturally shaped stones bear a striking resemblance to the artificially shaped Pre-Stellenbosch Pebble Culture tools, and in the absence of such evidence of glacial action as striations on the flaked surfaces of derived specimens, it is often extremely difficult to distinguish the natural from the artificial. This phenomenon is not uncommon in certain stretches of the Vaal, where material that is to-day recovered from the implement-bearing Older Gravels was derived from the glacial tillites. The Abbé Breuil was the first to detect and record the potential pitfall (1943), and he has more recently drawn attention to the fact that these glacially shaped pebbles may be found in any of the river gravels that contain human artifacts (1944) ; indeed, they may be found in gravels or deposits that do not contain artifacts and may be mistaken for artifacts.

Another common and most dangerous pitfall is hidden in the fact that no interred bones can ever belong to the level or ' floor ' on which they occur. The detection of the mouth of a grave and therefore the time-horizon of the burial can be a most difficult matter—and if one is to avoid the pitfall and therefore avoid misinterpretation, one cannot be too careful in excavations which include burials. Such pitfalls are too well known to need emphasis, so I propose in this essay to use illustrations that are purely picturesque ; a few may even seem frivolous, but each contains warnings which no field-worker can afford to ignore. I have selected five, the first of which is

The Story of an Axe. During a visit to a farmer near Knysna early in 1922 I noticed a well-ground and polished Neolithic axe on the desk in his office. A wood-cutter had brought it in from the forest. When sent for, the man said he had picked it up near the road to the bridge at the bottom of Phantom Pass. At that time only three Neolithic-type axes had been discovered in South Africa, and I was naturally most intrigued and interested to come across a fourth. Of the three recorded specimens, one was from Grahamstown and two from Knysna, all of material that can be matched locally. ' These three relics ', said Péringuey, ' stand alone, and an explanation of their presence would be merely speculative ' (1911). The next nearest specimens were from Central Africa : the Congo and Uganda. To find any evidence of the Neolithic Age in South Africa at that time was therefore rather exciting.

I lost no time in sending this new find to Péringuey, and on 25 February 1922, he replied that in his opinion it was not of local manufacture. ' It certainly not only resembles the European Neolithic ', wrote Péringuey, ' but to me has been accidentally dropped where found by a European. There are a certain number of Scandinavians at work at Knysna. The material is a mud-stone. This, however, is not of much help, because similar stone could be found here in the Karroo '. Péringuey was partially influenced by the two previous Knysna finds, and obviously suspected that this new one was of European origin. When I submitted the specimen to Prof. S. J. Shand, the well-known petrologist at Stellenbosch, he said it was made of a mud-stone which could have been found just north of the Outeniquas. I therefore felt that the mystery of the three Knysna specimens had to be cleared up. In consequence, I approached Mr Charles Thesen the head of the well-known timber firm and son of the Thesen who came to South

Africa from Norway and settled at Knysna in 1869. He had shown a keen interest in my discoveries of Old Palaeolithic settlements in the district, and I knew that he would be interested in this new find. Although he recognized its artificiality, he did not recognize the stone, but when I mentioned Péringuey's suspicions he immediately told me that a Norwegian whom he knew had come to the Cape, had collected and sold stone implements as a boy in Norway, and that he had brought a small series of Neolithic axes out with him. The Thesen family once had some of these but they had disappeared. ' Possibly ', he said, ' they were given to John Rex '—the only other local collector in the area at the time. ' Oh, yes ', said Rex, when I called on him, ' I have two '. Both his specimens were of flint and obviously of European origin. I then got into touch with Prof. Shand again, told him the full story, and asked him to re-examine the stone. After months of waiting, while I incidentally discovered another specimen of flint, the Norwegian origin of the axe was confirmed—and so we now know that the Neolithic Axes of Knysna, some of which may possibly be widely scattered in and even beyoud the district, were brought to South Africa from Norway in the latter half of the 19th century. No wonder Péringuey refrained from speculation ! Since then true locally made Neolithic-type axes have been found in South Africa, but cautious interpretation is still necessary. Had Mr Thesen not recalled the exploits of a countryman, the problem may possibly have remained unsolved, especially as at least some of the axes are of material that occurs locally.

The second pitfall is from the Free State : it was encountered two years later, and is The Story of a Bottle. This has nothing to do with prehistory, but is an excellent demonstration of how meaningless depth can be in relation to age. While building a bridge over the Modder River at Glen, some miles north of Bloemfontein, I had occasion to sink a moderately deep excavation for the left abutment, the foundations of which were reached by sinking a caisson through over 30 feet of fine sand to bedrock. Removing sand from below the cutting edge of the caisson while I was fortunately present one afternoon, a native worker exposed a mineral-water bottle at a depth of over 20 feet below the surface. The bottle was undoubtedly *in situ*, and as it contained a loose marble in its dimpled neck it could not have been much more than a quarter of a century old—possibly a relic of the Officers' Mess of the garrison stationed there at the time of the Anglo-Boer War. Had the bottle been a *biface*, one might have been impressed by the depth at which it was found—but a glass bottle was quite a different matter ; and the depth at which it was found certainly called for an explanation.

The bridge crosses the river on a sweeping curve. Circumstances beyond the engineer's control dictated the selection of a site that would ordinarily not have been chosen. The excavation referred to was on the inner curve of the bend, and until the bridge and a weir immediately up-stream of it were built, the tendency of the stream was to erode the right bank or outer curve and to slit up the left or inner bank. Surface drainage increased the latter tendency. The result was that from the time the bottle was dropped on the left bank to the time the bridge was built, the water's edge had receded and the bank had been silted up to a depth of over 20 feet where the bottle lay. Yet there was nothing else to show that such a great change had come about in so short a time.

This movement of a river may seem strange to those unfamiliar with the behaviour of South African streams, but it is not at all unusual in many areas. The most remarkable case within my experience occurred in the north-eastern Cape where, after a flood, a bridge was left high and dry with the stream it had previously crossed nearly a quarter of a mile away. The engineer's problem then was to decide whether to build a new bridge or to take the stream back to the old. We took the stream back, and, after nearly a quarter of a century, it fortunately is still there !

My third experience also has the building of a bridge as its background. It occurred in 1925, and is

The Story of a Wheel. To support a tall bridge-pier in the centre of the Sand River on the farm Jakhalskraal, in the Winburg district of the Orange Free State, we had to sink a caisson through about 25 feet of a super-saturated deposit of sand in order to reach a sound foundation. The cutting edge of the caisson ultimately came to rest on a boulder-bed about 23 feet below the river-bed. While clearing the bottom prior to sealing the caisson, I was delighted with the appearance of a very rolled artifact—apparently of Old Palaeolithic Age—but amazed, almost immediately after, to see fragments of an obsolete type of heavy wagon-wheel appear. The wheel was found on the boulder-bed nearly 23 feet below the river-bed. There could be no doubt that it was *in situ* at the time of its removal. How did it get there ?

Enquiry revealed that when the earliest Europeans occupied the area towards the middle of last century, a ford was constructed about a quarter of a mile upstream of the bridge site. Presumably a wagon had foundered while crossing the river, and in the course of time the portion of the wheel we recovered was carried downstream and sank as it went. This could easily have happened in that the bed of the river is of sand, which becomes very disturbed and is readily transported during floods. The weight of the wheel prevented its superficial transport in the first instance and helped it to sink in the second.

The fourth potential pitfall is

The Story of a Bead. In 1936 I recovered a necklace from a witch-doctor in Sekukuniland. The necklace included the vertebral column of a small snake and eleven glass beads. Ten of the beads were typical Nigerian spheroids of the opaque, white-spotted, black variety—each about 1 cm. in diameter—and the eleventh a somewhat larger but typical pale blue translucent Roman melon oblate—at least that was my impression at the time. When the witch-doctor was asked where he had got the beads, he said the spotted blacks were given him by an old woman and the melon-type he had inherited from his father, who had been a witch-doctor before him but had since died. The old woman said she got the blacks from a son who had served in France in a Native Labour Corps during the 1914–18 War, and that as far as she knew he had brought them out from Europe.

The presence of the Nigerian beads may be accounted for by transport from the basin of the Niger possibly as a trophy or souvenir by a member of the Foreign Legion to France and thence to South Africa by the native, but the Roman bead presented a more difficult problem. And was it Roman ? ' Yes ', said the museuem authorities when I showed it to them in Cairo in 1937, ' it is definitely Roman ; a well-known variety '—and they showed me similar types from the North African coast.

Among the beads we have from Zimbabwe and related ruins and settlements in South Africa are several ancient Arab and other varieties mixed with medieval and later trade beads, fragments of Chinese porcelain of the Sung and Ming Dynasties. Persian faience and fragments of other articles of domestic use or trade value. The great mass of these trade and other goods is post-medieval, but among them we occasionally find survivors from a remoter past, and there can be little doubt that this Roman bead is one of them. Had it been lost by the witch-doctor and later recovered by one of the romantic interpreters of the Zimbabwe Culture, there is no knowing what interpretation might have been put on it.

Glass beads have to be most carefully interpreted. Early this century a German firm of bead-makers copied the well-known blue hexagonal or so-called ' ambassador ' beads that are found in the Zimbabwe Ruins of Rhodesia and the Transvaal. Because of the

value attached by certain natives to these beads, a German merchant imitated them, hoping to make a considerable profit from the sale of his imitations, but the natives detected their modernity and would not buy them. The beads were then hawked round the country, but without success, until, in 1908, a market was found for them in the Transkei. Xosa maidens wished to buy them in order to adorn the tokens they gave their young men when they became betrothed. But they only wished to buy one at a time, and as the smallest coin in circulation was a penny, the beads were sold at an enormous profit at a penny a piece. For reasons known to women only, the vogue died out a few years later, and the bead was left off the emblem of engagement—with the result that those already sold were discarded and in time scattered no doubt in their thousands throughout the Transkeian territories. As a result of exposure to the elements, sand-blast, and so on, these beads will in time acquire a patina which may make it difficult to distinguish them from the true Zimbabwe Culture types—and we may find a claim that the southern limit of the culture is to be sought in the Transkei !

I have an interesting story of a North American Indian arrow-head picked up on the veld by a schoolgirl on a remotely situated farm in the district of Steynsburg. It is tanged and of chalcedony, which cannot be distinguished from material which occurs locally—and no one living in the district at the time was able to recall a local collector or anyone at all interested. We all know of Brandon flints dropped on the veld and occasionally on Stone Age sites by the early pioneers who used muzzle-loading, flint-lock guns, but lest we forget that Nature can do what men did at Glozel, I feel I should extend this excursion into the picturesque by recording

The Story of a Buddha. Some years ago a Harrismith farmer dug a water-furrow. At a depth of about seven feet below the surface of what he took to be undisturbed, virgin soil, he found a small stone figure of a Chinese Buddha. He took this into town and showed it to the local Inspector of Schools, who happened to be a keen amateur collector. The Inspector sent it to me as having been found at depth *in situ* in undisturbed soil. These facts and the nature of the object, and possibly the presence of Chinese wares in the Zimbabwe Culture, impressed the Inspector sufficiently to seek an explanation. All I could do was to tell him that the stone was pagodite and the carving certainly Chinese, but at the same time I reminded him that the Voortrekkers had passed this way in 1837, and added that I suspected that the figure,which had once possibly adorned a tea-caddy brought from the East in the days of the Dutch East India Company, had been lost or discarded when broken in the area as the trek passed through ; that in the course of time it had become naturally buried and overgrown, and that after over a hundred years it reappeared in a deposit which seemed to be much older than it actually was. By itself, depth is not necessarily an indication of age—as the soda-water bottle of Glen so clearly showed. Yet it is one of the commonest pits into which the amateur falls.

Another ' virgin soil ' story is told by Schofield, where he cites the case of a Roman coin ' found at a depth of two or three feet by natives who were digging a trench through virgin soil ' in Southern Rhodesia. The coin had been struck in Alexandria about the year A.D. 270, and had Schofield not known ' that at least two members of the Public Works Department staff carried pocket pieces of this very period during the construction of the building near which the coin was found ', it is extremely probable that the mystery of its presence in Rhodesia would have remained unsolved and, incidentally, have given rise to considerable controversy. Schofield's contribution on discoveries of ancient coins in South Africa should be read by all who are interested in pitfalls (1942). After recording the discovery of a number of Ptolemaic, Roman, Byzantine, Indian and other coins, Schofield sums up his views by saying that ' none of the ancient coins have any real

bearing on the archaeological problems of South Africa, as they are all purely sporadic in their occurrence '.

In conclusion, I feel that as a builder of bridges, both actual and archaeological, I may be permitted to close this contribution by altering the medieval Leonine proverb which tells us that 'he falls not from the bridge who walks with prudence' to : *Non in foveam cadit, qui cum sapientia vadit.*

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The Ancient Cart-tracks of Malta

by Instructor Captain H. S. Gracie, R.N.

THE barren hill-tops of Malta are scored in many places by ancient ruts cut deeply into the rock. They can be seen also on the slopes and on the lower plains, but less frequently because these areas are normally under agricultural soil. They always occur in pairs from 52 to 58 inches apart and were quite clearly used by vehicles. They have been discussed in print for 300 years but no agreement has been reached on how, when or why they were made or what vehicles used them. In fact, there are as many theories as there are authors. Of these writers only Captain E. G. Fenton[1] and Professor Sir T. Zammit[2] appear to have done any serious field work, and none has published a map. The present writer, therefore, decided to attempt the laborious task of plotting them, making such other observations and measurements as he could. Zammit, in the paper cited, reproduced some excellent photographs from both the ground and the air, to which the reader is referred.

Time did not permit an examination of the whole island and few observations were made in the low-lying south-eastern part. A fairly intensive survey was made of the high ground as far north as the Baida Ridge, which joins the northern shores of Ghain Tuffieha Bay and St. Paul's Bay. Two portions of the map are reproduced here. Where there are a number of parallel tracks in close proximity they are shown on the map as one on account of the necessarily small scale used. The gaps in the routes are mainly due to cultivated patches, and no attempt has been made to bridge them by conjecture.

Fig. 1 shows the Baida Ridge. The main feature of this area is that several tracks cross the ridge through the cols from valley to valley. One of considerable importance joins two groups of cave-dwellings that are still occupied. It is not possible to excavate here but other caves have yielded signs of occupation back to Neolithic times[3]. At both ends of this track the cave-dwellings open onto a ledge with cliffs above and below it. The ledges taper away to nothing so the tracks could not have gone on past the dwellings.

Fig. 2 shows the plateau south of Mdina, the ancient capital. Here we see other features, viz. the cliff road along the top of the seaward escarpment and, on the landward side, tracks running out to the promontories. The latter would appear to be connected with each other by tracks running round the heads of the valleys, and with the cliff road. Most of these promontories are bounded by cliffs so that the tracks could not have descended there to the plain below. These features can be observed over the rest of the plateau. The cliff road appears again further north-west at Imtahlep. On every promontory between Gebel Ciantar and Binjemma traces of tracks can be observed. They are usually just off the highest part of the ridge.

An important track, not shown here, starts at Salina Bay, where are salt pans that were shown on maps antedating the arrival of the Knights of St. John in 1530. It skirts

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[1] *Man*, May 1918, 40.

[2] Antiquity II, 1928, pp. 18–25. References to Zammit mean this article unless otherwise noted.

[3] M. A. Murray, *Excavations in Malta*, Part I, p. 12, chapter by G. Caton Thompson.

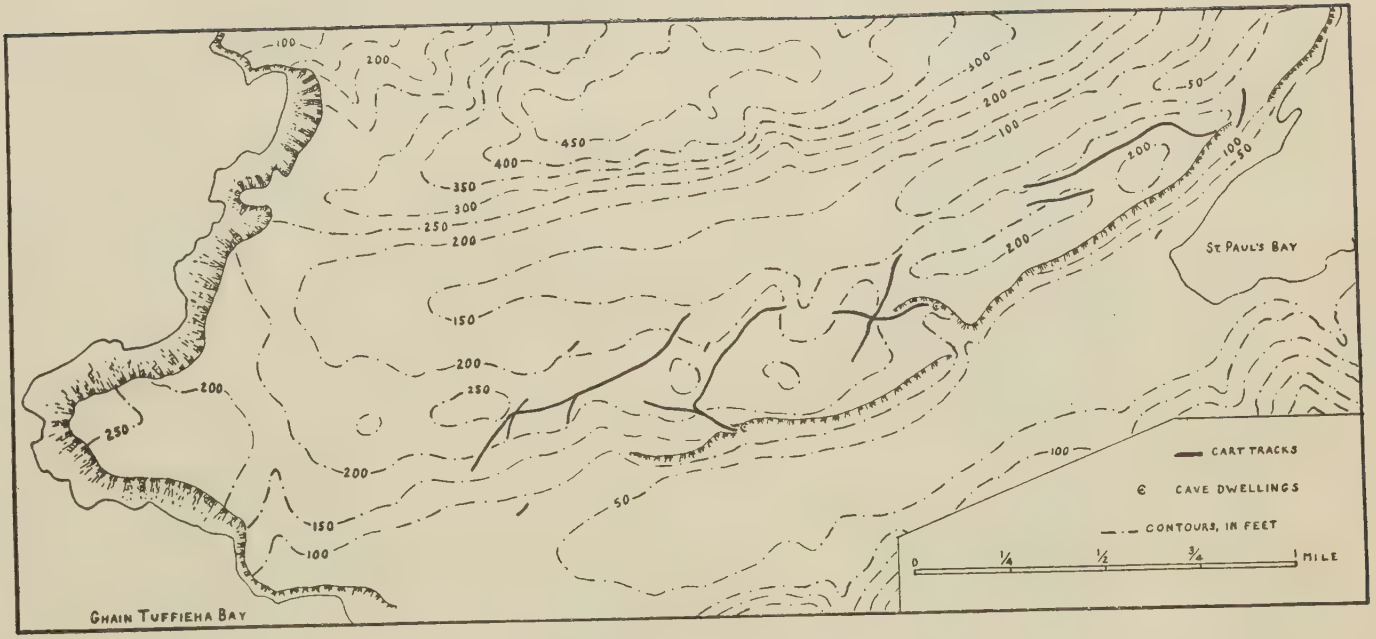


Fig. 1. CART-TRACKS ON BAIDA RIDGE

round a hill, never rising above the 50-foot contour, and crosses the low-lying land to the Great Fault two miles away where it zigzags up the slope. It then runs another mile along the top to Musta where it is lost in the suburbs of the town.

An analysis of all tracks long enough for observation of their trends gives the following results :

Along the contour near the top of a ridge	12
Out to a promontory	11
Round the head of a valley	6
Along the cliff top	4
Up over a ridge and down the other side	6
From valley to high plateau	3
In low-lying plain	2
Down to the sea	3
Joining cave-dwellings	2

The map suggests that the tracks formed a simple road system connecting settlements with each other and possibly with springs and salt pans. The positions of Prehistoric settlements are almost unknown in Malta but promontory sites are generally popular in many periods. A few post-holes near Borg-en-Nadur suggest that their remains should be sought on such sites. Francesco Abela[4], writing in 1647, says the tracks were used for transporting building stone down to the sea for shipment to Africa during the Arab occupation in the 10th and 11th centuries A.D. It is clear that this is not so as there is plenty of good building stone on the lower levels and much nearer the harbours than is the high plateau. Zammit, misled by the absence of a map and thinking, erroneously, that they ran from the valleys to the hill-tops, deduced that they were used for carting soil up to the bare plateau. He did not, however, produce any evidence to show that the hills were not covered with soil in cart-track times. In the natural state hills in these latitudes and under similar climates are covered with soil which supports trees and shrubs. The felling of trees, followed by over-cropping or over-grazing, quickly results in serious soil erosion. (Recent examples in the Tennessee Valley and in South Africa have been brought to our notice by the Press). The process of denudation is still continuing in Malta in spite of the terracing that has been carried out all over the hilly districts.

The widths of the tracks were measured whenever this was possible. In many places only one rut was to be seen and in others one or both were full of soil. Time did not permit of excavation so the number of reliable measurements was only 178. The measurements were taken between the centres of the curved bottoms of the ruts, plumb lines being used where the depth made this necessary. The results show a wide variation about an average of 55 inches. The actual measurements, reduced to the nearest inch, were as follows :

Width in inches	52	53	54	55	56	57	58
Number of measurements	4	38	22	43	20	48	3

This table indicates concentrations at 53, 55 and 57 inches, but too much should not be read into this. It was observed that the widths of the wider tracks in several instances were fairly constant but this did not apply to the narrower ones. As an example 300

[4] *Descrittione di Malta*, Malta 1647.

yards of track near San Paul ta Tarja was measured at frequent intervals and gave the following measurements in inches :

$52\frac{1}{2}$, 55, 54, 55, 55, $\begin{matrix}55,\\56\frac{1}{2},\end{matrix}$ $\begin{matrix}55\frac{1}{2},\\54\frac{1}{2},\end{matrix}$ 53, $53\frac{1}{2}$, $53\frac{1}{2}$, $52\frac{1}{2}$, $\begin{matrix}54\frac{1}{2},\\52\frac{1}{2},\end{matrix}$ 52, $\begin{matrix}?\\54\frac{1}{2},\end{matrix}$ $\begin{matrix}56\\54\frac{1}{2}\end{matrix}$

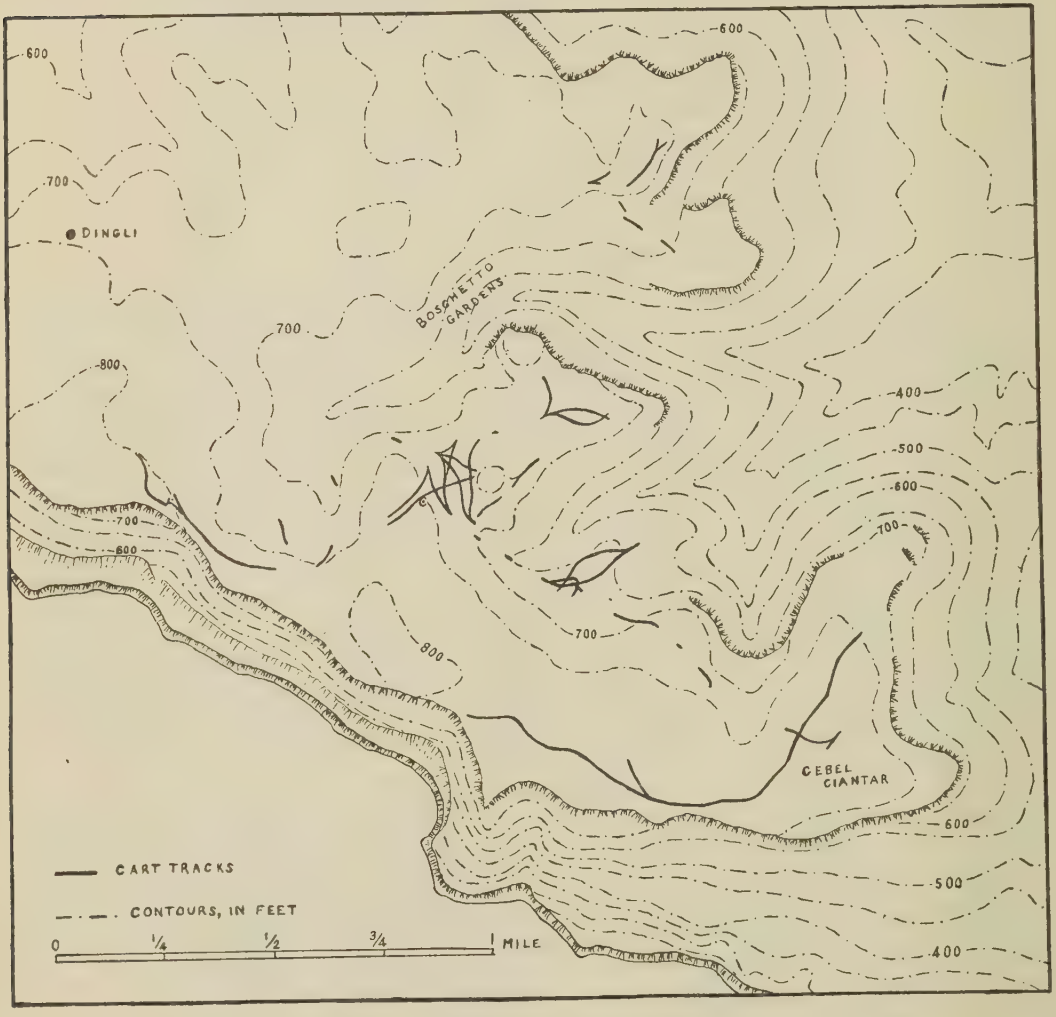


Fig. 2. THE PLATEAU SOUTH OF MDINA

In places where the track was duplicated as described below two widths are given. This variation suggests a flimsy vehicle capable of considerable distortion. Plate I, A shows the intersection of two tracks near Boschetto. The deeper is a constant 57 inches wide and the shallower varies between 53 and 54 inches. The lip of the shallower track can be seen to be a sharp right angle and this suggests that the deeper is the younger one ;

for if it were older the vehicles passing along the new track would have bruised the edge and worn it down. This suggests that the vehicles in course of time became wider and more rigid.

The depths of the ruts range from a mere smoothing of the surface to more than 2 feet. The greatest depth noted was 27 inches and there were several measurements between 22 and 24 inches. These are the mean depths of a pair of ruts taken from the highest point of the intervening rock. A wheel to negotiate such ruts would need to be 5 feet in diameter, allowing only 6 inches for the hub.

There are a number of instances of sharp turns in the tracks, including one shown in the lower middle part of FIG. 1. In four such turns the radii were 38, 38, 24 and 14 feet. In no case was there any widening or flattening of the bottoms of the ruts such as would necessarily have been formed by a sledge runner. Sledges, therefore, could not have been used. Fenton excluded sledges on account of the undulatory nature of the bottoms of the ruts.

Frequently a track will bifurcate, the two parts coming together again after a short distance. Sometimes the two will separate widely enough to enable two vehicles to pass, but more often the separation is only a few inches and may even show only as a widening of the ruts. These last are said to be duplicated. Triplicated tracks (PLATE I, B and C), occur and, on the same track just beyond (C), an example of quadruplication can be seen. Zammit concluded that the wider of these bifurcations were deliberately made shunts and shows an air photograph of Tal Minsia as an example. In this particular case, and there are other instances, the two parts meet at different levels and could not have been contemporary. PLATE I, D shows the southern junction and a drop of 6 inches from one rut to the other. Duplications are very frequent and were observed in 25 of the 32 suitably preserved sites examined. The large numbers of groups of parallel tracks were not there for several carts to use the route at the same time. Whenever such a group can be traced for any distance it will be found to coalesce into one track in each direction. In particular the tracks shown in Zammit's plate III—twenty-three can be counted on the ground—all coalesce into three before they are lost under present cultivation. It is interesting to compare this plate with the frontispiece of O. G. S. Crawford's *Archaeology in the Field*. The two photographs show what one would expect in the formation of natural tracks—a multiplication of routes fanning out from a fixed point at the bottom of a rise and coming together again further on. In the one case parallel ruts are formed in limestone and in the other sunken roads appear in the comparatively soft chalk.

The most usual rut has a rounded bottom measuring $2\frac{1}{2}$ inches in width at 1 inch above the lowest point. There are many instances of wider ruts with flattish bottoms but these are special cases of duplication. They almost invariably develop either into two or more separate ruts or into one normally rounded. In PLATE I, B the triplicated rut can be seen in the distance where it has become a normal single one. PLATE II, A shows a section of a rut cut by an old quarry. This is rather wider than most but shows how the bottom is rounded. The usual section is something between this and the lower rut in PLATE II, B. Though many tracks are cut into by quarries good sections are scarce. As Zammit points out there are cases of tracks traversing a slope where the lower rut is deeper than the upper. A good example can be seen in a cutting below San Paul ta Tarja, PLATE II, B. A possible explanation is that on a slope a cargo of water in flexible skins would shift its centre of gravity far enough to cause a considerable difference in the weights carried by the two supports, and in consequence the lower rut would be subject to much greater wear.

The manner in which the tracks disappear or are lost is of interest and may be helpful when dating is considered. The disappearances can be classified as follows :

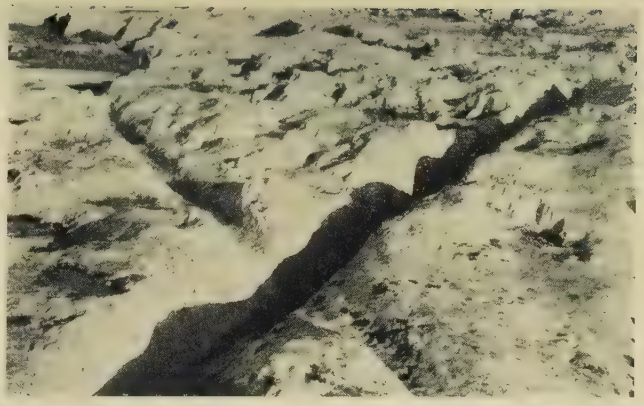
Manner of disappearance	*Per cent*
Lost under flat cultivation	22
Lost under terraced cultivation	18
Join modern lanes tangentially	17
Cut off by quarries, roads or buildings	27
Enter caves	2
Fade out on bare ground	13
Lost under sea or at cliff edge	1

If we exclude the 44 per cent lost on meeting the works of modern man the proportion lost under cultivation becomes much higher. In particular the proportion lost under terraced cultivation becomes 32 per cent. No instance of a track passing round a terrace so as to avoid it was observed. It is clear, therefore, that the tracks antedate the bulk of the great work of terracing. The track entering the sea in St. George's Bay, Birzebbugia, at one time re-appeared on the other side of the bay. It must now lie under two to three feet of water at its deepest point, if a sketch by A. L. Adams[5] is at all accurate.

The kind of rock seems to have had little effect on the making of ruts. They occur equally on the Upper and Lower Coralline Limestone. They also occur on the Globigerina Limestone, but little of this rock is exposed to-day without a covering of soil.

We can now consider the manner in which the tracks were made, their purpose and their date. Many factors point to their being natural tracks rather than made roads. Had they been deliberately cut duplication would not have occurred, for no intelligent man would cut a new track when an old one was already there within six inches of the desired route. Thin veins of hard rock lying vertically are often encountered but are seldom cut through. PLATE II, C shows a good example near Tal Maghtab. If the ruts had been deliberately cut, this obstruction would surely have been removed for it must have given each passing vehicle a nasty jolt. There are several instances of ruts passing through large boulders that could have been avoided by moving a foot or so to one side. Tracks on level ground often have very deep ruts that become almost invisible a few yards further on, which would be pointless in a made road. All these points suggest equally that the land was covered with soil. Heavy rain, such as occurred in October, 1951, when even modern roads disappeared under thick deposits of hill-wash, would hide the old tracks effectively. New ones would be worn down in approximately the old positions, perhaps yards away in open country, but almost on the exact spot where the route was restricted by trees, cliffs or buildings. Furthermore the present rock surface is quite unsuited to either animal or human traction. A freshly cut exposure of Globigerina Limestone under agricultural soil shows that the rock under damp soil remains comparatively soft and easily eroded. It is only after exposure to the sun and air that it develops a hard crust. If there were no soil and the hard crust had already been developed before the tracks were made, they could not have been worn down and the labour of cutting them would have been immense. Captain Fenton noted the rough surface and the duplication and made the same deductions therefrom.

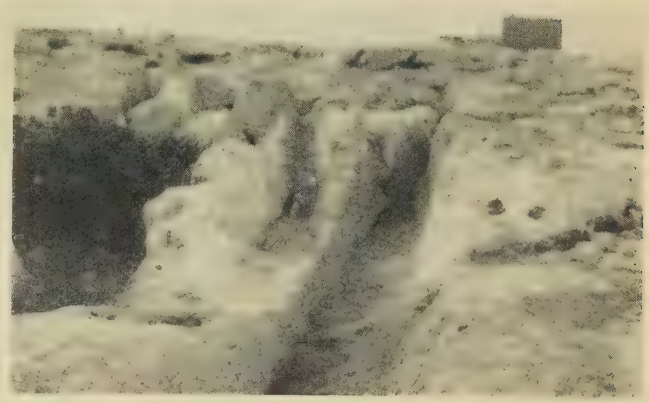
[5] *The Nile Valley and Malta*, 1870, p. 249.



a. CROSS ROADS NEAR BOSCHETTO

b. TRIPLICATED TRACK, GEBEL CIANTAR

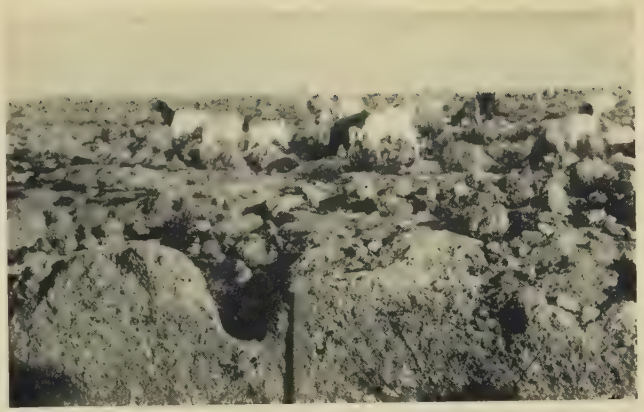
c. TRIPLICATED TRACK NEAR BOSCHETTO



d. JUNCTION, TAL MINSIA

PLATE I

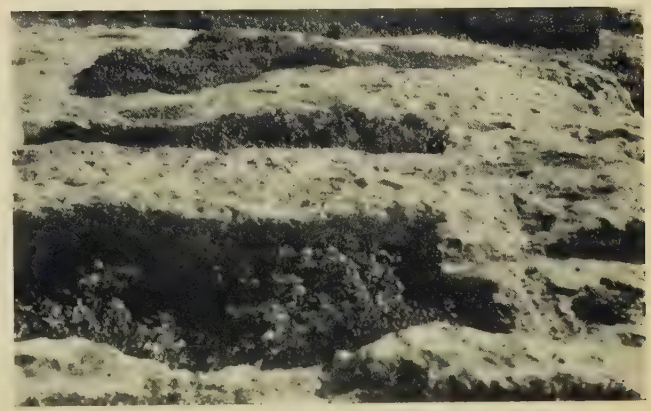
facing p. 96



a. SECTION NEAR BOSCHETTO

b. SECTION ON SLOPE, SAN PAUL TA TARJA

c. VEIN OF HARD ROCK, TAL MAGHTAB



d. PUNIC GRAVE, IMTARFA

PLATE II

PLATE III

THE ABERDEEN KAYAK

Photo by courtesy of the Anatomical Department of the University of Aberdeen

PLATE IV

BUILDINGS UNDER WATER; AN UNIDENTIFIED AIR-PHOTOGRAPH

Wheels five feet in diameter can hardly be accepted as pre-Roman, and it is hoped to show that the tracks are older than that. Furthermore, wheels could not have worn such ruts, as can be seen from Zammit's photograph of a modern cart-track. Wheels only widen a made rut in rock ; they do not deepen it appreciably ; nor do they produce a rounded bottom. We have seen also that the hair-pin bends are too sharp for sledges. The most likely vehicle then is some form of slide-car. This consists essentially of two shafts supported at the front ends by a horse or ox while the other ends trail along the ground. The body of the cart, probably made of light wicker work, is placed on the shafts just behind the animal. The ' heels ' of the slide-car are its widest part[6] so we need not be surprised at the width of the tracks in relation to that of an ox. This widening is well shown in a photograph published by A. C. Haddon[7]. Haddon also points out that these vehicles can be constructed entirely without metal. The heels of the slide-car can be shod with short replaceable hardwood spars and would be quite capable of wearing ruts in the soft rock in quite a short time. Such vehicles would also account for the bottoms of the ruts being rounded in section and undulatory along their length.

Slide-cars are, or were until recently, in use over many parts of Europe and Asia[8] and seem to have a respectable antiquity. The draught animals used include the horse, ox, buffalo and camel. The ox was available in Malta as far back as the Megalithic period. Representations of oxen can be seen on the walls of the temples at Tarxien and Hajiar Kim. Zammit found a pair of ox horn-cores three feet long at Tarxien and a potsherd with an incised pattern which he interpreted as bulls among trees.[9]

The date of this road system is more difficult to arrive at. Tracks pass over Punic graves at at least four places. At Imtarfa (PLATE II, D), the lip of the rut is a sharp right angle, indicating that the rut is older than the grave, which has cut through and truncated the rut. Professor Zammit claimed that the grave goods dated from 600 B.C., but Dr Baldacchino, Director of the Valletta Museum, considers that they may be up to a few hundred years later than this. We have seen above that the tracks are older than the bulk of the terracing but the date of this work is not known. Zammit found traces of its going on in Roman times at Tarxien[10]. Finally the land at St. George's Bay has sunk at least three feet since the tracks were made. Unfortunately one cannot say how long this might have taken. Local movements in this area can be quite rapid, but one would expect such a subsidence to have been noticed had it taken place in historical times. It seems reasonable to put the date before the advent of the Romans in 217 B.C.

Captain Fenton, in trying to arrive at a date, suggested that the tracks were made during a period of fairly dense population. This is confirmed by the map. He also maintained that a more humid climate than the present would be necessary to support such a population, which again is probably correct. He then suggests the wet period beginning about A.D. 700 on account of the large wheels, but he does not appear to have been aware of the evidence of the Punic graves. Zammit claimed that they were Neolithic on the grounds that it would take a long time for them to go out of use and be forgotten by the diggers of the graves. A change of economy rendering the system useless,

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[6] Cyril Fox. ANTIQUITY v, 1931, p. 190.

[7] *The Study of Man*, 1898, plate III and p. 168.

[8] G. Berg, *Sledges and Wheeled Vehicles*, Copenhagen 1935, pp. 134–6.

[9] *Prehistoric Malta*, 1930, p. 25 and pl. xxx.

[10] ibid., 1930, p. 31.

however, might occur in quite a short time. Marcellin Boule[11] points out that they were not connected with Megalithic buildings. The temples at Hajiar Kim, Mnaidra, Shirop il Hajin and Fomm ir Rih are surrounded by barren land but no tracks are to be seen. The last is on a promontory and the usual track runs out along it, but it stops some 200 yards from the temple. He suggests the wet period at the beginning of the Early Iron Age as the probable date and this seems to be the most reasonable, though it could be earlier. This would give time for the tracks to be developed and go out of use before 600 B.C., if that is the date of the Punic graves. The drier climate and soil erosion were making themselves felt in Greece by 400 B.C. according to Plato and the effect could be more rapid in a small island.

To sum up, it appears that a simple system of natural tracks joining settlements with each other and with springs and the sea was formed about the beginning of the first millennium B.C. but possibly earlier. The land was soil-covered and only one track of a group was visible at any one time. The tracks were worn down by friction and not deliberately cut. The vehicle in use was some form of slide-car, which became larger and more strongly made as time went on.

[11] *L'Anthropologie* XXIX, Paris, 1918–19.

The Scottish Kayaks and the 'Finn-men'

by Ian Whitaker

AMONG the more obscure aspects of polar research the problem of the appearance off Scotland of kayaks of Eskimo type is one of the most formidable. These craft, one of which has certainly survived, normally become waterlogged after about forty-eight hours in the water. How then were they brought to the British Isles, and by whom ?

Apparently the earliest reference to their appearance off the Scottish coast is that of the Rev. James Wallace, Minister of Kirkwall, Orkney, who wrote about 1688 in his *Description of the Isles of Orkney* :

> ' Sometime about this Country are seen these Men which are called *Finnmen* ; In the year 1682 one was seen sometime sailing, sometime Rowing up and down in his little Boat at the south end of the Isle of Eda, most of the people of the Isle flocked to see him, and when they adventured to put out a Boat with men to see if they could apprehend him, he presently fled away most swiftly : And in the year 1684, another was seen from *Westra*, and for a while after they got few or no Fishes ; for they have this Remark here, that these *Finnmen* drive away the fishes from the place to which they come.
>
> ' These *Finnmen* seem to be some of these people that dwell about the *Fretum Davis* [Davis Straits]. . . . One of their Boats sent from *Orkney* to *Edinburgh* is to be seen in the Physitians hall, with the Oar and the Dart he makes use of for killing Fish '[1].

In a footnote the writer's son, James Wallace, M.D., adds :

> ' I must acknowledge it seems a little unaccountable how these *Finnmen* should come to this coast, but they must probably be driven by storms from home, and cannot tell, when they are anyway at sea, how to make their way home again ; they have this advantage, that be the seas never so boisterous, their boats, being made of Fish skins, are so contrived that he can never sink, but is like a Sea-gull swimming on the top of the water. His shirt he has is so fastned to the Boat that no water can come into his Boat to do him damage, except when he pleases to untye it, which he never does but to ease nature, or when he comes ashore. There is another of their Boats in the Church of Burra in Orkney '[2].

Another account is that of the Rev. John Brand, whose *A Brief Description of Orkney, Zetland, Pightland-Firth and Caithness* was published in 1701. Clearly borrowing several details from Wallace, he nevertheless provides some additional information :

> ' There are frequently *Fin-men* seen here upon the Coasts, as one about a year ago on *Stronsa*, and another within these few Months on *Westra*, a Gentleman with many others in the Isle looking on him nigh to the shore, but when any endeavour to apprehend them, they flee away most swiftly ; Which is very strange, that one Man sitting in his little Boat, should come some hundreds of Leagues, from their own Coasts, as they reckon *Finland* to be from *Orkney* ; It may be thought wonderful

[1] Wallace 1883, pp. 33–4. [2] Wallace 1883, p. 33n.

how they live all that time, and are able to keep the Sea so long. His Boat is made up of Seal skins, or some kind of leather, he also hath a Coat of Leather upon him, and he sitteth in the middle of his Boat, with a little Oar in his hand, Fishing with his Lines : And when in a storm he seeth the high surge of a wave approaching, he hath a way of sinking his Boat, till the wave pass over, least thereby he should be overturned. The Fishers here observe that these *Finmen* or *Finland-Men*, by their coming drive away the Fishes from the Coasts. One of their Boats is kept as a Rarity in the *Physicians Hall* at Edinburgh '[3].

From these two descriptions, neither of which, it should be observed, are those of eye-witnesses,[4] it seems that at least five of these ' Finns ' have been seen off Orkney, the boats of two having been captured : the one whose boat was in the Church at Burray, the one seen off Eday in 1682, the one seen from Westray in 1684, the one seen on Stronsay about 1699, and a second one seen off Westray about 1700.

The boat which was in the Physicians' Hall at Edinburgh may have come from one of these latter four, or may be from a sixth visitor. It had been acquired by the naturalist Sir Andrew Balfour, who bequeathed his collection to the University of Edinburgh in 1694. A minute of the College of Physicians for the 24 September 1696 records the transfer of the boat to the University, which is stated as already having the oars of the boat and the ' shirt of ye barbarous man y^{t} was in y^{e} boat '[5]. When the University gave a large number of ethnographical specimens to the Royal Scottish Museum in 1865 there were two kayaks included, and these are now to be found in the latter museum, but it is not recorded which, if either, is from the bequest of Sir Andrew Balfour.

Another kayak which arrived off the Scottish coast, in the neighbourhood of Aberdeen, does however survive, and is to be found in Aberdeen University Anthropological Museum. This was described by Francis Douglas in his *General Description of the East Coast of Scotland*, first published at Paisley in 1782. In his discussion of Marischal College, he mentions :

' A canoe taken at sea, with an Indian man in it, about the beginning of this century. He was brought alive to Aberdeen, but died soon after his arrival and could give no account of himself. He is supposed to have lost his way at sea '[6].

It would seem that this is the same boat as that described by the Rev. Mr Gastrell of Stratford-on-Avon in his account of his visit in 1760 to King's College, Old Aberdeen :

' . . . in the Church, which is not used (there being a kirk for their way of worship) was a canoe about seven yards long by two feet wide, which, about thirty-two years since, was driven into the Don with a man in it who was all over hairy and spoke a language which no person there could interpret. He lived but three days though all possible care was taken to recover him '[7].

The chief discrepancy in the two descriptions lies in the fact that whereas Gastrell saw the kayak in King's College Chapel, when Douglas saw it some twenty-two years later it was in Marischal College. The custom of hanging model ships in churches is still observed in parts of Scotland. The transfer of any object from King's College to Marischal College at this particular period in their history is less understandable however.

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[3] Brand 1883, pp. 76–7.
[4] MacRitchie 1890, p. 354.
[5] ibid. pp. 360–1.
[6] Douglas 1826, p. 95.
[7] Quoted in Souter 1934, p. 14.

The kayak in question is undoubtedly of Eskimo type[8]. The frame is of *pinus silvestris*, or Scots Fir, a type of wood which is said not to occur naturally in Greenland or North America[9]. However, a certain amount of driftwood is picked up off the coast of Greenland even to the present day, having arrived at the east coast of that country from European Russia and Siberia. This at one time used to constitute the principal source of timber for the Greenlanders, and would be used by them for the manufacture of kayak frames in preference to whalebone (baleen). Nansen observed this westward drift, which he demonstrated in the voyage of the 'Fram' in 1893–6. It should be noted however that in another connection Graham[10] believes that driftwood is as likely to come from North America as across the North Sea from Siberia, whilst Sir Lindsay Scott[11] points to the Western coast of Scotland, the Hebrides and Orkneys as the sites of discoveries of drift timber and other trans-Atlantic jetsam from as far away as Jamaica and the Caribbean.

Whilst we may establish that the one surviving kayak is probably from Greenland, we are still confronted with two problems: how did it reach Scotland, and were the other kayaks recorded of similar origin? The very frequency of the reports of these voyagers having been seen suggests that they are all similar in detail. But there is a particular reason why accounts from Orkney should refer to 'Finns': namely the rôle attributed to Finns in Scandinavian folklore, much of which has been borrowed by the Norse inhabitants of Orkney and Shetland[12]. In the Norse saga-literature the Finns are credited with all sorts of magic powers, and these legends are probably derived in part from the Norse beliefs about the Lapps, at that time still practising shamanism[13]. This view is strengthened by the fact that the Norwegian word for 'Lapp' is *Finn*[14]. In the Shetlandic folktales the Finns often arrived in the form of seals, and, casting their skins, became human beings[15]. It has been suggested that this is a reference to men arriving in kayaks, which they would have to 'shed' to get out, but such a theory borders on the fanciful. The seal folk closely resemble folkloristically the swan-maidens first recorded in the older Edda, and subsequently common in Scandinavian oral tradition, whilst Andersson would also compare them with the maiden from Vellamo who appeared as a fish before Väinämöinen in the *Kalevala*[16].

The German folklorist Karl Blind suggested that the Finn and seal stories were a combination of the mermaid myth, an international motif, with a strong historical element: the raids of the Norse 'sea-dogs', who were presumed by the settlers on the islands to be 'Finns'.[17]. Whether or not this is the correct solution for the origin of the Shetlandic Finn-tales, it is easy to understand that with this folklore motif already established in the Islands, any chance visitors arriving in unusual circumstances might readily be called 'Finns'.

The references to Finns led MacRitchie to postulate that the kayaks were of European origin[18]. He pointed out that the traveller Stephen Burrough records a boat

[8] The Aberdeen kayak is of a type similar to more recent ones from the Greenlanders of Angmagssalik, East Greenland, to be seen at the National Museum, Copenhagen. This ascription has been confirmed by Birket-Smith 1924, p. 266. A full description of the kayak in question is to be found in Reid, 1912.

[9] MacRitchie 1912a, p. 132. [10] Graham 1952, pp. 134–5. [11] Scott 1951, pp. 151–3.

[12] For a modern version of the Finn motif in Shetland see Reid Tait 1951, pp. 5–6.

[13] Christiansen 1952, pp. 51–61.

[14] But cf. Kvalén 1925, pp. 44–9. [15] cf. Nicolson 1947, p. 14.

[16] Andersson 1947; for a discussion of the swan-maiden motif, see also Holmström 1919.

[17] Blind 1881, p. 402. [18] MacRitchie 1912a, pp. 130–1.

made of deer's skin from the western Samoyeds in 1577, and the French voyager De la Martinière tells of the capture of a canoe containing a man and a woman, made in the style of a gondola out of fish-ribs, covered with sewn fish-skins, in the same area in 1653. If such boats are recorded among the Samoyeds, he reasoned, is it not possible that the Lapps also used such craft? MacRitchie supported his hypothesis with the linguistic point that in Lappish the words for sailing vessels and large boats are all loan-words, whereas the real Lappish word for boat in the generic sense means ' skin-canoe '[19]. Another point cited in support of his theory is the unfortunately incorrect statement by Lord Avebury that Lapps were still to be found in South Norway in the mid-nineteenth century[20]. It is certain that Lapps used skin-boats in prehistoric times: the Kjelmøy culture of East Finnmark, established as being Lappish, was a sea-hunting culture, as was the controversial older Komsa culture in the same area, but we have no record from historical times of either sea-going skin-boats among the Lapps, or indeed a Sea-Lapp culture south of Nordland. The Lappish practice of sewing wooden boats with sinew, which suggests an earlier skin-boat technique, is recorded as late as 1555 by Archbishop Olaus Magnus, and in 1673 by Johannes Scheffer. The sole later mention of skin-boats in connection with the Lapps is from Vapsten *lappby*, Vilhelmina, Sweden, where skin-boats survived for use inland up to the first half of the 19th century[21]. There is no evidence to suggest, however, that the Lapps engaged in solitary sea journeys, or that they had a kayak-shaped vessel, or that they reached the Norwegian coast at any southerly point during the period under consideration[22].

One other European alternative remains: the suggestion by MacRitchie which he late rejected that the visitors to Orkney were Greenlanders who had escaped from Denmark. There are several references in historical accounts to Greenlanders who were taken, together with native skin-clothing and kayaks, to the Court of Copenhagen and more than one seems to have attempted to escape, presumably from home-sickness[23]. Whilst it is possible that one, or even two, of these escapees may have reached Scotland, it can scarcely be maintained that six or more arrived in the course of fifty years. One is thus forced to the conclusion that the ' Finn-men ' were in fact Greenlanders (the modern designation for the Eskimos of Greenland) making the journey from their homeland[24].

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[19] Düben 1873, p. 387n. [20] Avebury 1900, p. 281. [21] Quoted in Manker 1947, pp. 135–6.

[22] It is suggested by Cluness 1951, pp. 13, 19, that the Lapps preceded the Scandinavians in Shetland, arriving from Denmark. There is no evidence whatever that the Lapps were ever there, and I have heard of no tradition among them that their home was originally in Denmark, such as he cites. It is quite impossible that they were Finns from Finland (*Suomalainen* proper) as suggested alternatively by Professor Holbourn 1938, p. 141.

[23] MacRitchie 1912b, p. 502.

[24] A problem that must be considered in connection with the kayaks is the provenance of two harpoon-heads of Eskimo type found on the shores of the British Isles. The first, from Tara, Co. Down (Evans and Hawkes, 1940), was found on the shore there in 1927, and seems to belong to the Thule culture which flourished in Greenland in the 13th century. Hawkes believes that the chances of it arriving in the body of a seal are remote, and prefers to explain its presence as having been brought by a Norseman in 1263. The existence of a second hitherto undocumented harpoon-head, apparently of Old Thule type, although not wholly characteristic, would seem to nullify both the seal and Norseman theories. This latter harpoon-head, in the National Museum of Antiquities of Scotland (No. B.N. 44), was discovered in sandy ground near Colliston, Slains parish, Aberdeenshire, before 1876 (cf. *Proceedings of the Society of Antiquaries of Scotland*, vol. XI, p. 407, Edinburgh, 1876).

Nevertheless certain problems remain. Douglas' description of the arrival at the mouth of the Don of an ' Indian man ' may reflect a certain ignorance of human geography but Gastrell observed that the man was ' all over hairy ', which the Greenlanders are not, being typical examples of the Mongoloid scantiness of body-hair. Clearly this must either be a reference to his clothing, or a picturesque detail invented for effect. Another point, noticed by the historian of Orkney and Shetland, John Tudor, is that the fact that the visitors were seen from Burray and Stronsay points to their having been driven from the east, and the instances from Eday and Westray may with equal probability have also come from that quarter[25].

Our final objection must be that the voyage from Greenland (presumably via Iceland and the Færoes) repeated several times suggests deliberate design[26]. What possible reason can a Greenlander have had for undertaking such a trip ? We have many records of the wholesale migration of Eskimo communities, but never of single individuals in this way. It is unlikely that storm would send six or more Greenlanders to Iceland, and then on to the Færoes, and then further still. Yet this must have been the route taken, and stops must have been made, since, as already mentioned, the kayak becomes waterlogged after being in the water more than a certain length of time.

The postulated solution provides two lessons for the archaeologist and anthropologist alike : the long distances that can be covered by these flimsy craft given fortuitous circumstances, and the comparative proximity of the most northerly of the British Isles to the circumpolar cultural area.

The actual distances involved, assuming that the travellers availed themselves of the opportunity for restocking with fresh water and the drying out of near-waterlogged kayaks afforded by Iceland and the Færoes, are 180 English miles from the nearest point on the Greenland coast to N.W. Iceland, 275 miles from S.E. Iceland to the Færoes, and 185 miles from the Færoes to Shetland, or 200 miles from the Færoes direct to the Orkneys[27].

The similarities of certain aspects of the north British prehistoric material to the general circumpolar pattern has been sufficiently emphasized elsewhere[28]; the means by which such similarities may develop may well be tied up with our suggested solution to the problem of the Scottish kayaks[29].

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[25] Tudor 1883, p. 342.

[26] MacRitchie 1912b, p. 496.

[27] Assuming that waterlogging took place if the kayak were immersed in water longer than 48 hours, the passengers must have been near Olympic standards ! The current record for kayak pairs (male) Devizes to Westminster (124 miles) is 24 hours 51 minutes. One need not assume (as does the author of Anon. (1944, p. 104) that the boat travelled directly from Greenland to Orkney without any intermediate stop—a minimum distance of 1180 nautical miles.

[28] Gjessing 1944, p. 64 ; 1953, p. 133.

[29] I wish to thank Professor Stuart Piggott for drawing my attention to the two Eskimo harpoon-heads found in Great Britain, as well as for the references to Evans and Hawkes 1940, and Graham 1952, and Professor R. D. Lockhart, Curator of Aberdeen University Anthropological Museum, for permitting me to examine the kayak there.

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Some Recent Periodical Publications

by the EDITOR

WE receive a constant stream of publications of archaeological societies, issued by national and provincial bodies in various countries, with requests to notice them in ANTIQUITY. Much as we should like to do so, it is not possible as a regular practice for all sorts of reasons, chiefly lack of space. We also receive many requests to exchange them for ANTIQUITY, and these too we are obliged to refuse; this is an obvious mutual convenience for societies which have libraries, but ANTIQUITY is not a society and we cannot pay the printer's bill with anything but money. Nevertheless we try occasionally to make up by an omnibus notice, and this is one them. We can only hope that in this way some small assistance may be given to those whose ultimate objectives are, like ours, the advancement and diffusion of knowledge.

IRAQ, Vol. XV, part 1, Spring 1953, is the organ of the British School of Archaeology in Iraq (founded in memory of Gertrude Bell) and issued from 20 Wilton St., London. The first work is devoted to Professor Mallowan's usual prompt and workmanlike account of his excavations, this time at Nimrud (Kalhou) in 1952. One of the ivories had a cruciform symbol which looks remarkably like a late survival of the (Cretan) 'horns of consecration' and double-axe. R. W. Hamilton publishes some fine Umayyad carved plaster of the 8th century from Khirbat al Mafjar in the Jordan valley, and deals generally with the origins, history and extent of this art, in which several different traditions converged to create a new and easily recognizable style. M. V. Seton Williams describes painted pottery made in parts of Turkey and North Syria between *c.* 1900 and *c.* 1550 B.C., some of which has Persian cognates. R. Maxwell-Hyslop writes about bronze lugged axe- or adze-blades, also called Trunnion Celts, for which an Anatolian origin early in the 2nd millennium is suggested. Later the type may have spread westwards and northwestwards through Mycenaean trade.

One should not, in this brief and inadequate notice of *Iraq*, omit all mention of the earlier post-war issues, which are full of good things. Naturally pride of place belongs to the first-hand accounts of excavations, particularly those of Professor Mallowan which being written with a light hand are readable. To a non-expert like the present reviewer they seem to be exactly what such reports should be. *Iraq* is not, however, confined to articles dealing with excavations or inscriptions of a highly specialist nature. Articles by Rachel Maxwell-Hyslop are a welcome sign that the study of distributions, which has been so helpful to European prehistorians outside France during the last half century, has spread eastwards. The illustrations deserve a special word of praise (e.g. the Stela, vol. XIV, Plates 2 and 3 and the carved Umayyad plaster, vol. XV, Plate 7). Not all field-photography is as good as it should be, and some is so bad as to be unpublishable (*experto crede*); but these illustrations are nearly all photographically good and reproduced well.

SAALBURG JAHRBUCH is the *Bericht des Saalburgmuseums* Vol. XII (1953) published by De Gruyter of Berlin. Fritz Kretzschmer discusses hypocausts and their fuel, with full technical details of their heating. Joachim Werner's article is concerned with the late La Tène period and those useful archaeological refuges—horse-trappings. Ole Klindt-Jensen of Copenhagen publishes two bronze griffin-heads, one from Vimose in Denmark and the other from the Roman fort of Zugmantel in Germany; they are very

much alike and enable the bog-hoards of Vimose and Thorsberg to be provisionally dated to the 2nd or 3rd centuries A.D. The other articles deal technically with particular types of objects.

ARCHEOLOGICKÉ ROZHLEDY, Vol. v (1953), is the useful and informative bulletin edited by Jan Filip which keeps us informed about archaeological work in Czechoslovakia. Summaries of articles are printed in Russian and French, and although there are cross-references to the illustrations in the summaries, it would be a great help if these could also be given French captions. We welcome the French summaries, but we feel they are less useful than would be summaries in English, for the potential English readers must far outnumber the French, and of course German rather than French would be for purely geographical reasons far more profitable. No doubt the choice of languages is dictated partly by political reasons. The printing of both text and illustrations is excellent. Dr Klima (whose article was printed in our last number) records the discovery of coal-cinders under the younger loess associated with a Gravettian industry, proving that Late Palaeolithic man had found out that coal could be burnt ; there is an outcrop of coal close at hand. Other articles record the burial of a neolithic dog's skull, two B-beakers and wristguard, a trepanned skull of the Roman period. Further excavation at Biskupin in Poland (for which see Kostrewsky in ANTIQUITY, XII, 1938, 311–17) is recorded. Remains of wheeled wagons have been found, and an urnfield. It is calculated that the whole village used up 7000 cubic metres of wood. 'A similar village exists at Izdebno about 4 miles distant'. A Middle Bronze Age (Unetice-Aunjetitz) village with rectangular huts has been excavated at Postoloprty in Bohemia, and the houses of this period are dealt with in a separate article by I. Hnizdova. Throughout there is a conspicuous lack of references to archaeological publications in the English language.

THE JOURNAL OF THE PAKISTAN HISTORICAL SOCIETY, Vol. I, parts 1 and 3 (1953) is fortunately printed in English. An Editorial by Dr S. Moinul Haq calls attention to the 'strong prejudices' of the pioneers of historiography in the Sub-continent, quoting Sir Henry Elliot who approved of teaching history because of its propaganda value. But he himself quotes with approval a politician's admonition to historians to prove the value of the Islamic code 'in the complicated conditions of life to-day'. If they follow this advice they will cease to be historians and become propagandists too. Maulvi Zafar Hasan describes the 17th century Pearl Mosque in Lahore Fort, rescued from the Public Works Department by Lord Curzon. (This department seems to specialize in sacrilege everywhere outside Britain ; but probably from ignorance rather than malice, and cases have been known of sudden conversion and repentance. It is the business of archaeologists and historians to hasten the process). Dr Paul Kahle writes a valuable account of Chinese porcelain in the lands of Islam. Huge quantities eventually found their way to Istanbul, having probably been taken there from Egypt. But we would point out that not all the Egyptian celadon-ware was Salim's ; it was regularly traded direct from China and landed at Aidab, where it may still be picked up on the shore. Mirza Ali Azhar describes Hadrat Mahal's role in the War of Independence, formerly called the Indian Mutiny. Dr Hans Kruse suggests that, during the period of Muslim rule in Sicily, Christians had to wear distinguishing badges, just as elsewhere had also Jews and Zoroastrians.

In spite of what we have said above, we admit that the contents of this Journal, though often biased, are by no means dull reading, which is more than can be said of many European studies of Islam. Macaulay too was neither unreadable nor unbiased.

The current number (130 ; April 1953) of the BULLETIN of the American Schools of Oriental Research contains a valuable article by the Editor, Professor W. F. Albright,

on synchronisms which enable the reign of Rehoboam to be dated about 920 B.C. with a very small margin of error. He also contributes a note on the traditional home of the Syrian Daniel, located by him at Hermel, south of Kadesh : see *Ezekiel* XIV, 14, 20 : XXVIII, 3, and the *Aqhat Epic* published in 1936 by Virolleaud.

The 78TH ANNUAL BULLETIN of the Société Jersiaise contains a mixed grill of geology, entomology, philately, zoology and recent history. Archaeology, however, forms one of the chief preoccupations of its members, for the Society not only has to maintain a museum and a popular antiquity (the Hougue Bie), but also subsidises excavation and publication. In this number the most important archaeological item is contained in the Report of Father Burdo's excavations in the cave called La Cotte de St. Brelade, first made famous long ago by Dr Marett. Under the Mousterian deposit excavated by Dr Marett, and separated from it by more than four feet of sterile clay, sand, and peaty strata, is a layer at least 14 feet thick containing Acheulian hand-axes and assigned to the beginning of the last interglacial period. This is a most important discovery because, while Acheulian implements are very abundant on the surface and in graves in many parts of the world, habitation-sites are very rare. Father Burdo knows of ' only five caves beside La Cotte [which] are known to have been inhabited by Acheulian Man ; and in only two of them was he also flaking his flint and making tools by the fireside. These are Et Tabun cave in Mt. Carmel . . . and La Pech de l'Aze, in the Dordogne valley '. The large proportion of blades and flake tools suggest doubts, which the reviewer has long felt, about the validity of the distinction between core and flake industries. Flakes are a necessary by-product of all flint-work, and if Acheulian Man was clever enough to make an axe, he was surely not such a fool as to ignore the flakes, whose many uses must have been obvious. The distinction is founded on negative evidence ; even so it ignores the fact that hand-axes were used during all the later palaeolithic periods.

England is celebrated for the multiplicity of local societies and publications which are apt to confuse and bewilder foreigners, and to handicap the researches even of natives. This multiplicity is, however, a mark of vitality, arising from the existence of that large body of amateurs which is the strength of foundation of British archaeology. Its inconveniences may be overcome if the publications of all are available in a few large libraries. Its merits are that the publications contain, all in all, the record of a large number of discoveries that otherwise would go unrecorded. For this reason it is most foolish to despise them. The latest to come into existence is a slim pamphlet called the PROCEEDINGS OF THE WEST CORNWALL FIELD CLUB (New Series, Vol. 1, No. 1 ; 1952–3), which fully bears out the above remarks, for it records many finds—a beaker, a possible long barrow, an earthwork revealed by air-photography and two stone cists in Scilly—which are eminently worth publishing ; and two of the articles would do credit to any archaeological publication. One is a useful index of articles on Cornish archaeology between 1932 (when Hencken's book appeared) and 1952 ; the other is an account of the excavation of the prehistoric village at Bodrifty already mentioned in ANTIQUITY (XXVI, 1952, 90). The articles and notes are adequately illustrated by plans and drawings. A preliminary Editorial is couched in vigorous terms of what the writer calls ' healthy self-criticism ' which seems rather to have a retrospective application. The publication of these Proceedings was made possible by an anonymous gift ; one could wish that others might follow suit, for no better form of help could be given by anyone who wishes to benefit archaeology in West Cornwall, an important area and one of the earliest to become known (through the trade at Ictis) to the outer world. (Copies of the *Proceedings* may be obtained from the Secretary of the West Cornwall Field Club, Lowenac, Camborne, Cornwall, *price 2s 6d*).

Important New Books and Articles

The inclusion of a book in this list does not preclude its subsequent review

Neolithic Cultures of the British Isles, by Stuart Piggott. Cambridge University Press. £3 10*s*. [To be reviewed.]

Archaeology from the Earth, by Sir Mortimer Wheeler. Oxford University Press. £1 5*s*. [To be reviewed].

Language and History in Early Britain : a chronological survey of the Brittonic Languages, First to Twelfth Century A.D., by Kenneth Jackson, Professor of Celtic Languages, Literature, History of Antiquities, University of Edinburgh. Edinburgh Univ. Press, 1953. £4. [To be reviewed].

Prehistoric Settlements on Dartmoor and the Cornish Moors, by C. A. Ralegh Radford. *Proc. Preh. Soc.*, 1952, 55–84.

Swanscombe Man, by Kenneth P. Oakley. *Proc. Geol. Assoc.*, lxiii, Part 4, 1952, 271–300.

Essai sur les Chasses Romaines, des origines à la fin du siècle des Antonins. Paris : E. Boccard, 1951 : 610 pages, 40 plates. (Vol. clxi de la Bibliothèque des Écoles Françaises d'Athènes et de Rome).

The Cat, by F. E. Zeuner. Oryx, Vol. 1, No. 2, 1951, 65–71.

Notes for the Guidance of Archaeologists in regard to expert evidence. Published by the Council for British Archaeology, Institute of Archaeology, Inner Circle, Regent's Park, London, N.W.1. Price 3*d*., postage 1*d* extra.

Handbuch der Altesten Vorgeschichtlichen Metallurgie in Mitteleuropa, by Helmut Otto and Wilhelm Witter. Johann Ambrosius Barth Verlag, Leipzig.

Die Wikingerzeit auf den Nordfriesischen Inseln, by Dr Peter la Baume of Schleswig. *Jahrbuch des Nordfriesischen Vereins für Heimatkunde und Heimatliebe*, Jahrgang 1952–3, 5–185. [A very useful and complete summary of Viking finds, with 15 distribution-maps (Britain included on some) and several plates ; but no address or place of publication is given anywhere, thus making it unnecessarily difficult to obtain].

Mors en Bois de Cerf sur le Territoire du Bassin des Carpathes, by A. Mozsolics. *Acta Archaeologica Academiae Scientiarum Hungaricae*, Magyar Tudomanyos Akademia, Budapest, Vol. iii, 1953, fasc. 1–4, 69–109. [A useful little corpus of information (in French) about horse-bits, illustrated by 39 pictures of them].

The Solutrean in Hungary, by M. Gábori. *Ibid.* (in Russian), 1–56 : French summary, 56–68.

Die Bronzezeitlichen Vollgriffschwerter Bayerns, by Friedrich Holste. C. H. Beck'sche Verlagsbuchhandlung, München, 1953 : 56 pages, 18 plates. DM. 14.50.

Vases Ornés de la Moselle, by E. Delort. To be obtained from the author, 3 Place du Roi George, Metz. Price 1000 francs, postage 72 francs. [232 pages, 94 line-blocks of figured *Terra sigillata*, of which it is a useful corpus for excavators and museum curators].

TAUNUS-ÜBERGÄNGE UND WETTERAU-STRASSEN IM VORLAND VON FRANKFURT, by WILLI GÖRICH. *Mitt. des Verein für Geschichte und Landeskunde zu Bad Homburg vor der Höhe*, Heft 23, 1954. [A study of ancient, mostly medieval, roads in the Taunus, based upon extensive field-work and observation of numerous deep traffic-ruts and hollow ways, and well presented with large-scale maps: an excellent model for others to follow].

HAGUE-DIKE: les fouilles en 1951 et 1952, by HOLGER ARBMAN. *Meddelanden från Lunds Universitets Historiska Museum* (Gleerup, Lund), 1953, 191–222 (in French). [A further account of the excavation of this linear earthwork cutting off the northern end of the Côtentin peninsula. Though there were no datable finds, it is presumed to be of Viking origin. There were two periods of construction. The earthwork is first mentioned in 1253. Charcoal was found and is to be submitted for a C 14 dating].

GEOLOGICAL EVIDENCE in Western Victoria relative to the antiquity of the Australian Aborigines, by EDMUND D. GILL. *Memoirs of the National Museum of Victoria*, No. 18 (18 May 1953), pp. 25–92, 4 plates. [An important and useful statement of the facts: see also Mr Gill's note on p. 110 below].

CURRAN POINT, LARNE, COUNTY ANTRIM: the type-site of the Irish Mesolithic, by HALLAM L. MOVIUS, JR. *Proc. R. Irish Acad.*, Vol. 56 C1, pp. 1–195. 25 shillings.

FORMENGRUPPEN UND KULTURKREISE IM EUROPÄISCHEN PALÄOLITHICUM, by KARL J. NARR (Göttingen). 34 Bericht der Röm.-Germ. Komm., 1951–3, 1–40. [A very useful critique fully illustrated by distribution-maps and tables].

AN INSCRIBED TABLET FROM PYLOS, by CARL W. BLEGEN: printed in the Oikonomos Festschrift (1953) pp. 59–62. [This is the famous Tablet 641, read by the finder (C.W.B.) with the aid of the ' phonetic values . . . experimentally assigned to the Linear B characters by Michael G. Ventris before the tablet was known '. The results are very satisfactory, confirming Ventris's views].

THE MYCENAE TABLETS: a transcription by EMMETT L. BENNETT, JR., with an introduction by A. J. B. WACE. *Proceedings of the American Philosophical Society*, vol. 97. [A limited number of *Copies* of this article may be obtained from: Messrs W. Heffer and Sons, 3/4 Petty Curry, Cambridge, at a price of *7s 6d*].

FORTIFICATION IN ISLAM BEFORE A.D. 1250, by K. A. C. CRESWELL: a lecture delivered before the British Academy on 18 June 1952, published in their *Proceedings* for 1952, pp. 89–125, and also sold separately by G. Cumberlege. [A short masterly survey, fully illustrated, by the leading authority].

EARLY ROME: I. Stratigraphical researches in the Forum Romanum and along the Sacra Via, by EINAR GJERSTAD. Gleerup, Lund.

Notes and News

KEILOR MAN

Where Dry Creek debouches into the Maribyrnong River ten miles NW of Melbourne, there is a pit in the yellowish silt of an ancient terrace where in October 1940 a fossil human skull was discovered. James White was working with a pick which penetrated the skull of a middle-aged aborigine, now known as the Keilor Skull, but could be more accurately called the Keilor Cranium, for no mandible was associated with it. The skull was placed in the National Museum, Melbourne. It was described by Wunderly (1943) and Adam (1943), while Mahony (1943 *a*, *b*) described the geology on the basis of fieldwork done by Keble. Mahony suggested that the skull belonged to the Riss/Würm Interglacial and there has been a good deal of discussion about this by reason of its bearing on the evolution of *Homo sapiens*. Keble was aware of this difficulty, and when he published his work (Keble and MacPherson 1946, Keble 1947) he suggested that the skull was an intrusive burial and not a fossil.

The present writer (1953 *a*) has applied the fluorine test to the Keilor Cranium and shown that it is a true fossil having the age of the terrace in which it was found. Moreover, if it were a burial, much more than the cranium would surely be found. The fossil was nine feet from the surface of the terrace and about 25 feet horizontally from the bank of Dry Creek—too far for an aborigine to excavate for burial. The terrace material is compact and requires considerable energy for its excavation ; it will be remembered that the workman was using a pick when he found the cranium.

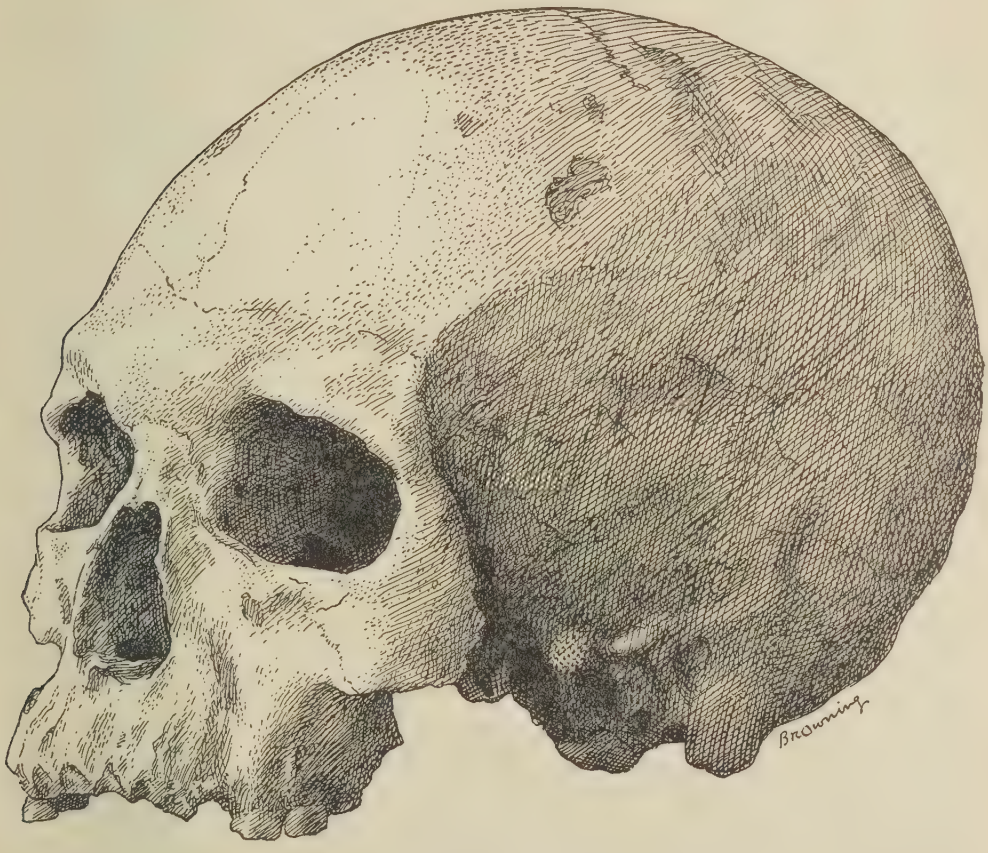
On examining the Keilor Cranium, the writer has found evidence of it being a ' rolled specimen '. For instance, one zygomatic arch is broken, and one end of the break in particular was well rounded before fossilization. The cranium was therefore worn by the river before final natural interment. Since Wunderly's description of this interesting fossil, Professor S. Sunderland and Dr L. J. Ray have further cleaned it of its calcareous encrustation, and they are making a new study of it.

Weidenreich (1945) has shown that Keilor Man has affinities with Wadjak Man in Java, which is on the presumed route of migration of the aborigines to the Australian continent. A layer of ash and calcined bone with which an implement was associated bear independent evidence to the presence of man at the time the Keilor Terrace was built up. Four miles and five miles respectively downstream (in a direct line) from the Keilor Cranium site, the writer has recently discovered in the Keilor Terrace a number of ancient hearths, implements of quartzite and similar materials, and the bones of various animals. The concentration of the bones at these sites suggests that they are from ancient middens that have been redistributed by the flood waters of the river that laid the silt that buried them. It is hoped to obtain a dating of the Keilor Terrace from the charcoal of the hearths. The number of hearths found suggest that there was a tribe of aboriginals living in the valley of the Maribyrnong River at that time ; Keilor Man was probably not a wanderer to the valley but a member of a population that occupied the area at the period when the Keilor Terrace was being built.

Climate of Keilor Time

By Keilor time is meant the period during which the Keilor Terrace was being laid down by the flood-waters of the Maribyrnong River. This river at the present time

has a mean discharge of about 560 gallons, and like so many Australian rivers it ceases to flow for two or three of the driest months of the year. The worst floods never reach the top of the Keilor Terrace, on which houses are built in some areas and on which extensive orchards and market gardens are maintained. The river is doing much more



THE KEILOR SKULL
National Museum of Victoria, Melbourne, Australia

cutting than filling at the present time, and indeed the Maribyrnong River is the bane of the Melbourne Harbour Trust Commissioners because it carries so much silt into the harbour area. Thus Keilor time was one of much heavier rainfall when the river was running at a much higher level, and doing much more filling than cutting in this area.

Since Keilor time was a pluvial time, we can imagine Keilor Man living in a valley where there was abundant vegetation and plenty of food for the herbivores which seem to have constituted the chief item of his diet.

Fossils are unknown from the Keilor Terrace except at the three sites where fossil hearths have been found, and this must surely be significant. As already suggested, these bones must be for the most part food bones redistributed from ancient middens by the river waters that buried them. If this is so, then the bones indicate the menu of Keilor Man. At the Cranium site kangaroo, wombat, and rat have been recognized (Gill 1953 *b*). At the second site kangaroo only has been found so far. At the third site were discovered kangaroo, wallaby, bandicoot, and rat bones. Nearly all the bones are fragmented as is commonly the case in middens. Judging by these fossils, the diet of Keilor Man was apparently much the same as that of the aborigines of to-day.

No bones belonging to the extinct giant marsupials which are so characteristic of the Pleistocene have been found. It is hard to know whether the absence of these bones is due to the animals being extinct in Keilor time, or to the fact that the Maribyrnong River valley is a youthful one with steep sides—the kind of place the big marsupials avoided. The bones of giant marsupials are found along gently-sloped creeks and rivers in terraces that appear to belong to Keilor time, but so little is known of Quaternary stratigraphy yet in Australia that it is difficult to be sure of these things.

River terraces may be regarded physiographically as a series of flat surfaces separated by slopes and scarps, or geologically as bodies of sediments. Using the second approach, a suite of three terraces can be readily recognized in the Maribyrnong River valley, characterized by their lithology, internal structures, chemical condition, soils, spatial relationships, and type of erosion (Gill 1953 *c*). The oldest is the Arundel Terrace, next is the Keilor Terrace (whence came the Cranium), and the youngest is the Maribyrnong Terrace. Each terrace was built in a pluvial period, then incised in a following comparatively arid period. Now there was a pluvial period 13,000–10,000 B.C., an arid period 4000–3000 B.C. and another pluvial period about 1500 B.C. (Gill 1953 *d*). A recent radiocarbon dating shows this sequence to be of the right order of time. The Maribyrnong Terrace is partly the present flood plain, but parts of it are not reached by the floods. It has been and still is being eroded in many areas. If this terrace is an expression of the brief recent pluvial period, then the valley it occupies in the Keilor silts was cut during the post-glacial arid period, when also the Keilor sediments were oxidized. The Keilor Terrace would then belong to the pluvial period before the arid period, i.e. at the tail end of the Pleistocene.

Another line of evidence is that marine deposits of the ' ten-foot ' eustatic sea infill the lower 11 miles of the river's course, interdigitating with the Keilor Terrace. This ten-foot sea-level is thought to be contemporaneous with the Arid Period of Australia and the Post-glacial Optimum of Europe, but it would hardly do to be dogmatic about this since radiocarbon datings will be available soon. However, the geological story, so far as it is worked out, shows that Keilor Man belonged to the last big Pluvial which is believed to be at the close of the Pleistocene, but he is certainly not 150,000 years old as many lines of evidence converge to prove. The catch in the earlier attempt at dating was that the terraces were regarded as a function of eustatic sea-levels, whereas their sedimentation, seaward slope, and fossil content indicate that they are normal river sediments (Gill 1953 *e*).

So the writer imagines a middle-aged man of the ancient Keilor tribe dying at the end of the Pleistocene, and being buried by his tribesmen in the soft sands of the river's flood plain, but subsequent erosion exhumed the skeleton, and after a short journey, the cranium was re-interred to be discovered in 1940 by James White's pick !

EDMUND D. GILL.
National Museum of Victoria, Melbourne

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A PROBABLE HUNTER'S TRAP OF THE IRON AGE

On the foreshore of the marsh area to the west of Clacton (G.R. 62/165135) I found a pair of antlers of the Red Deer under unusual circumstances. The antlers are large, mature, and not shed, but carry fragments of the skull showing that they had been violently broken away. Beneath the antlers there were eleven vertebrae, including atlas and axis, and five or six ribs, but no other remains of any kind.

The row of eleven vertebrae were in the position of life, and had certainly been held together by the sinews when they were buried. I naturally assumed at first that the vertebrae belonged to the same animal as the antlers, but after cleaning them at home this did not seem to be correct, and I am indebted to Dr Frazer of the British Museum (Natural History) for naming the vertebrae as belonging to a young Horse.

The circumstances of discovery may be briefly stated as follows :

1. The site was out on the foreshore not far from mid-tide level, that is, several feet above the outcrop of the occupation surface (' Lyonesse ') of the Neolithic and Beaker stage.
2. The antlers were entangled in a number of branches of trees, of which the thickest, which was probably a stem rather than a branch, was 9 inches diameter.
3. Except in the silting of channels (and it was certainly not a channel) one does not find remains of trees, or bones, in the *Scrobicularia*-clay which surrounded the site on all sides.
4. At a casual glance one might have supposed that this closely associated group of remains were in that deposit, but examination showed that over an area of some 4 yards diameter the material was a markedly different and much softer silt from the surrounding deposit.
5. On carefully digging it out it became clear that a pit had been dug by man from an overlying occupation surface which must have been reasonably dry at the time.
6. None of the wood showed any sign of shaping, or of having been used for building, and its confused position without plan or arrangement was noteworthy.

It seems to me that the most probable interpretation is that this strange and unusual group of remains was a hunter's pit-trap, dug from the occuption surface on the top of the *Scrobicularia*-clay, and insecurely covered over with branches, etc., which were intended to collapse under the weight of an animal.

The problem of dating this supposed pit-trap can only be approached by indirect evidences, as no datable object was found. On the lower side, the occupation of the underlying Neolithic surface was closed by submergence, resulting first in a bed of salt-marsh peat followed by a wide-spread sheet of *Scrobicularia*-clay (estuarine silt). Occasional finds of pot-sherds in and over the salt-marsh peat indicate that the first stage of the submergence took place during, and before the end of, the B-Beaker stage. As is well known, remains of A-Beaker occur in the Fen Country over the *Scrobicularia*-clay, but local conditions may well make minor differences of dating. On the Essex marshes I know of no evidence of occupation on this upper surface during the Bronze Age ; perhaps it was too swampy where not actually submerged.

There is, however, good evidence of settled occupation on this level during the Iron Age, but there does not seem to have been much during the Roman occupation.

I have found evidence of Iron Age occupation at less than half a mile to the north-east of the ' trap ' and also at less than two miles to the south-west (62/136126). At the latter site I found Red-hill briquetage, artificially cut timber, bones of domestic animals, and Belgic ware of the 1st century B.C., in the silting of a channel. There appears to have been a slight oscillation of emergence during the Iron Age sufficient to make the marshes habitable. In the Thames estuary there is good evidence of re-submergence during the Roman occupation, and this doubtless affected the Essex coast equally and reduced the occupied surface to a salt marsh. In fact, those conditions are represented in an overlying bed of salt-marsh peat, and at that time such a pit would be merely a small pool of salt water.

At the time I found it, the immediately overlying surface had been washed away by the sea, so I could not directly measure the depth of the pit, but at the present day the contemporary living surface would stand at 7 or 8 feet O.D., and was probably higher originally as the clay must have suffered compression during the centuries, while the floor was near to, or a little below, the O.D. line.

In conclusion, I can state that the association of evidences was unique in my experience of the marsh deposits, and while my interpretation may not be correct, I cannot suggest a satisfactory alternative that is in accordance with the facts ; particularly the string of neck-bones of the horse. It is probable that part of the associated remains had been washed away before I found it. S. Hazzledine Warren.

AN UNIDENTIFIED AIR-PHOTOGRAPH

The air-photograph reproduced on PLATE IV was found by Professor Bersu lying on the floor in the Berlin offices of the German Archaeological Institute. These offices had been looted by Russians, the marks of whose hobnail boots can be seen on the photograph. On the photograph are marks indicating that it was intended to have a block made from it for publication. Whether it ever was published or not is not known. It has been shown to several people, but none of them can identify it. The photograph shows what books like rectangular walled enclosures under water near a sandy shore, beyond which are small plots of ground, irrigated by water-channels. An African locality seems more likely than one in Europe. It is hoped that by publishing it here it may be possible to locate the site. O.G.S.C.

Reviews

SHAHEINAB. An account of the excavation of a neolithic occupation site carried out for the Sudan Antiquities Service in 1949–50, by A. J. ARKELL. *Oxford University Press, London*, 1953, XIX+108 *pages*, 57 *text figures*, 43 *half-tone plates. Price* 3 *guineas.*

This is another important contribution to the pre-history of the Sudan, a subject which Mr Arkell has made peculiarly his own. In his earlier book, *Early Khartoum*, he announced the discovery of three new pre-historic cultures, the earliest of which he called the Khartoum mesolithic, followed by what he then called the Gouge Culture. This latter he now proposes to re-name the Khartoum Neolithic, and it was to obtain as much new information about it as possible that the excavation at Esh Shaheinab was undertaken. The site, a low bank near the west bank of the Nile about 35 miles north of Khartoum, was selected because it seemed from surface inspection that the remains of no other cultures occurred there, but in the event it was found that the mound had been used as a cemetery in ? proto-dynastic times, in Meroitic times, in ? medieval Christian and in modern though not very recent times. The neolithic habitation level yielded the usual assortment of objects—animal bones, potsherds, stone implements, ornaments and the like—but, curiously enough, no graves of that period were found ; the dead were not buried in the settlement and the method of their disposal is a mystery.

The author's main interest is not so much in the site itself as in its relationship to other early settlements in north Africa, and, in particular, with its possible connections with the early pre-dynastic in Egypt. He concludes that the Khartoum Neolithic is closely related to the Fayum Neolithic, and that both of them (together with a similar culture found by French archaeologists at Ténéré) probably had a common origin in the country around Tibesti in the French Sudan. But here comes a snag ; the radio-carbon date for the Khartoum Neolithic at Esh Shaheinab is found to be about 3300 B.C., which can hardly be considered pre-dynastic. Two separate determinations were made, one on charcoal from the site and the other on shell, the exact figures being :—

Charcoal	.. ..	5060±450	before present (in 1950)
Shell	.. ..	5446±380	,, ,,
Average	.. ..	5253±415	,, ,, or *ca.* 3300 B.C.

Now the published radio-carbon date for the Fayum Neolithic A is 6095±250 before present, or 4145 B.C., which is 800 years earlier than the Khartoum Neolithic. Mr Arkell does not think it reasonable to accept this difference in time between two such closely related cultures and he cannot therefore accept the date of 3300 B.C. for Esh Shaheinab. He does, however, suggest a way of closing this troublesome time-gap. He points out that the maximum possible radio-carbon date for Esh Shaheinab (5446+380=5826 b.p. or 3876 B.C.) is very close to the minimum for the Fayum (6095—250=5845 b.p. or 3895 B.C.), and he suggests that, until more tests have been made on material from both cultures, an approximate date of 3900 B.C. might be accepted for both. This certainly takes full advantage of the latitude allowed by the figures, but it may cause a raised eyebrow here and there.

To the present reviewer it seems a welcome achievement that a radio-carbon date for the site should have been obtained at all. Its great merit is that it is completely independent of any archaeological consideration whatever ; being based on measurement

and calculation it is as impersonal as a clock. It is improbable that the date of 3300 B.C. can be wildly wrong even if it is not accurate to within a couple of centuries, and at least it deserves consideration. Must related cultures necessarily be contemporary ? Do not primitive techniques persist in the Sudan for hundreds of years with little perceptible change ? A date which might have formed the starting-point for argument has now itself become involved, and the argument cannot be settled until more radio-carbon dates can be determined.

Meantime the actual objects found during the excavation are described and illustrated in the greatest possible detail in the beautifully produced book before us. The author offers apologies for the fact that funds did not permit the publication of a larger volume but surely these are unnecessary. Larger type and illustrations could hardly have given the student more information than is now provided and he would only have had to pay more for it. F. ADDISON.

LIFE OF THE PAST : an introduction to palaeontology, *by* G. G. SIMPSON. *Yale Univ. Press, New Haven,* 1953 (*London, Cumberlege*). £1 5*s*.

Strictly speaking this admirable book falls outside the scope of ANTIQUITY which is concerned with the human species and with others only in so far as they impinged upon it. Archaeology does not begin until palaeontology is almost concluded—until the last few of the thousand million years that life on the earth has lasted. The excuse for noticing it here is that a correct conception of the process of evolution and a knowledge of the chief facts are both desirable assets in the study of mankind, and that in any case the publishers have sent us a review copy.

The book begins by describing how fossils—the raw materials of palaeontology—are found and dated by means of stratification ; how the living organism is reconstructed from the surviving hard parts ; of how genetic relations between such organism may be inferred and the processes by which changes take place. Chapter 10 deals with theories of evolution, emphasizing the oft-forgotten fact that *The Origin of Species* (1859) has two chapters devoted to palaeontology. The last chapter, Fossils and Mankind, explains why the history of life on the earth is worth studying, and is mainly intended, we suspect, for those ' businessmen, politicians, labour leaders, housewives ' and others who think of themselves as ' hard-headed '. The author has the gift of a lucid style which, to quote his own words in a slightly different context, is ' comprehensible but not condescending ', and the illustrations are all the better for being his own and need no apology. O.G.S.C.

THE PLEISTOCENE FAUNA OF TWO BLUE NILE SITES, *by* A. J. ARKELL, D. M. A. BATE, L. H. WELLS *and* A. D. LACAILLE. *British Museum* (*Natural History*) *Fossil Mammals of Africa, Series No.* 2. *London* 1951. *Price* 15*s*.

This publication hides under its title not only a description of the fossil fauna from two deposits on the Blue Nile, Singa and Abu Hugar, but also an important study of fossil African buffaloes, a re-examination of the fossil human skull from Singa and a description of the stone industry associated with the fossils at Abu Hugar ; it is thus of considerable importance to African prehistorians.

In a foreword Arkell gives an account of the discovery of the Singa skull and of the circumstances which led up to the discovery of the contemporary Abu Hugar fossils and artifacts and summarizes the findings of the other authors. It is perhaps unfortunate that the geology of these two sites has not been described in more detail or section drawings given.

Miss Bate's contribution to this paper was the last piece of work she undertook before her death deprived African prehistorians of a helper whose wide knowledge was both invaluable and unique ; and her work and she herself will long be remembered by those who had the privilege of knowing her.

The deposit from which the fossils and artifacts are derived is the kunkarous base of the bank of the Blue Nile at the two sites mentioned above, underneath the black clays of the Gezira Plain. This deposit is considered to date either to the early or middle Gamblian. Miss Bate describes the chief character of the fauna as being that it contains mainly extinct forms, the majority of which are characteristic of the Upper Pleistocene fauna of North and East Africa. But others, for example a ? Sivatherine, are more indicative of an earlier fauna. Miss Bate favours the suggestion that the fauna dates as a whole to the earlier period, but with the proviso that since most of the specimens were weathered out of their original layer it is possible that two distinct faunas are represented.

The finely preserved skull of an extinct form of buffalo which Miss Bate has described under the new name of *Homoioceras singae* has provided her with the opportunity to review the whole question of the fossil buffaloes of Africa, and their relationship to the Asiatic and Recent African buffaloes ; and she has been able to show very conclusively that the existing buffaloes and the extinct *Homoioceras* closely resemble each other in essential skull characteristics and, contrary to existing belief, differ considerably from the Asiatic *Bubalus*, the immediate ancestry of which remains practically unknown.

Dr Wells' re-examination of the fossil human skull from the Singa site, in the light of his extensive knowledge of the fossil crania from southern Africa is a most valuable study. Apart from the facial skeleton which is missing the skull is nearly complete and the bone is heavily mineralized as is that of the other fossils from this region. Dr Wells compares this skull, which he considers to be that of a male, with the Recent Bushman, Boskop and other South African fossils. While recognizing that the general paedomorphic and robust nature of the Singa skull associates it with the South African Boskop type, Wells sees a number of differences and considers that either the Singa and Boskop fossils represent different stages in development from a common ancestral form, or that their common origin has been modified in one or both by hybridization. He shows how a much greater variation than most South African physical anthropologists would admit is possible within a single group and suggests that both the Boskop and Singa skulls represent a common proto-Bushman stock modified either by divergent descent or by hybridization. In a comparison with the north-west African Afalou group of skulls Wells sees no resemblance at all between these and Singa, though points of similarity can be seen between the latter and Gamble's Cave No. 4 from Kenya. One point of interest, however, is his mention that, had the Singa frontal bone been found isolated, an attempt might well have been made to compare it with the Skhul group of Neanderthal skulls from Palestine ; similarly perhaps the rather massive mandibular fragment associated with a very late Middle Stone Age industry from the cave of Porc Epic, near Dire Dawa in Abyssinia, may also have given a false impression of ' neanderthaloid ' features.

The recognition of a proto-Bushmanoid type in the Nile valley raises of course the question of the centre of origin for the spread of this type whether from the south, northwards or from northern Africa or Asia southwards. Until more is known of the relative dating of the Boskop and Singa types Wells refuses to speculate on this question.

Mr Lacaille is to be congratulated on his description of the stone industry from Abu Hugar, as the material is particularly poor (mainly quartz) and such as to make many a prehistorian despair. The industry is essentially a chopper-flake-tool assemblage in

which there occur high-backed core choppers or scrapers, side scrapers and the short flake tools with faceted striking platform of rather developed ' Middle Stone Age ' form. In fact the industry shows unmistakable affinities with the southern African Middle Stone Age. The author compares this industry with the proto-Stillbay industry from Lochard in Southern Rhodesia though he believes that the former is typologically of a more developed form. Thus once again we find the association of a proto-Bushmanoid with an industry exhibiting faceted platform technique.

A point which occurs to one in connection with this industry is that, making allowances for the poor lithic material, some material other than stone must have been mainly used for tools by Singa man. On the analogy of the Nuer and other peoples of the Upper Nile Valley one might suggest wood and horn, in which case the stone industry would assume only secondary importance and would only be the means to an end.

The publication is in the usual well produced style to be associated with the British Museum and we look forward to further publications in this series. J. Desmond Clark.

EL ARTE MOBILIAR DEL PERIGORDIENSE SUPERIOR DE LA COLOMBIÈRE (AIN) Y SU RELACION CON EL DESARROLLO DEL ARTE CONTEMPORANEO EN LA REGION FRANCO-CANTABRICA. *By* Hallam L. Movius, Jr. *Ampurias*, vol. xiv. *Barcelona*, 1952.

Readers of Antiquity will probably be aware of Professor Movius's recent excavations in the cave of La Colombière, 72 km. northeast of Lyon. The paper under review is a preliminary report, dealing mainly with conclusions arising out of one aspect of the finds, but providing a useful summary and bibliography of other aspects of the investigation. A full report in the form of a monograph is announced, and will be awaited with interest in view of the details already made available in this and other articles.

I understand that Professor Movius's attention was first drawn to the site owing to the promise that it gave of correlation between a particular phase of the Upper Palaeolithic and a fluvio-glacial terrace, which in turn might be connected with a specific advance of the ice. Localities where such direct correlation with glacial stages can be demonstrated are all too rare.

The archaeological succession originally comprised two layers of Gravettian separated by a sterile layer from an overlying Early Magdalenian. The absence of Solutrian is well known in this part of France, and need cause no surprise at La Colombière. Although it may be, as Movius suggests, that the sterile layer corresponds in date to that phase elsewhere, it is also possible that a belated Gravettian locally took its place. We must not forget that at this period we are dealing with cultural entities far more closely knit in space and time than those of earlier stages of the Palaeolithic, and the archaeological record may be expected to reflect, at least to some extent, the existence of individual social groups.

However this may be, there is no doubt that Professor Movius's work has established the cultural context of a remarkable series of art objects, decorated in a naturalistic style, that have been found from time to time at this site. They belong, not as an earlier generation of prehistorians might have assumed to the Magdalenian, but quite certainly to the later Gravettian. In a layer containing somewhat sparse but adequate traces of flint work in this tradition, the excavator was so fortunate as to find *in situ* a magnificent example of decorated pebble, covered on both faces with a complicated palimpsest of engravings. With great patience he has succeeded in unravelling most of these, and so added an important series to the dated iconography of the culture.

In the discussion of this find Professor Movius raises a number of important points. There is for example much to support his contention that the whole question of the stylistic history of palaeolithic art is due for overhaul. To say this is hardly to disparage the great work of the pioneers in the subject ; their first problem after all was to convey an adequate idea of the extent and character of the data, and to produce working hypotheses. This stage is now complete, and the tremendous task before us is to prepare something approaching a comprehensive photographic corpus of the necessary standard, coupled above all with a large scale record of undoubted superpositions in the parietal art. Until this has been done there can be no final judgment, in the opinion of the reviewer, on the vexed question of stylistic stages and ' cycles ' in this most remarkable manifestation of the mind of palaeolithic man. C. B. M. McBURNEY.

AMERICAN SCHOOL OF PREHISTORIC RESEARCH ; Old World Bibliography no. 6, *April* 1953. (*Duplicated*). *Recent Publications mainly on Old World Palaeolithic Archaeology and Palaeo-Anthropology. Compiled by* HALLAM L. MOVIUS, JR.

By undertaking the laborious but immensely useful task of making an annual analytical bibliography of works on the Stone Age and generously distributing free copies, Professor Movius places all his colleagues under a very considerable debt. This aspect of Prehistory owing in part to its close connection with other branches of learning, is probably the most prolific in published output. While an absolutely complete bibliography of this kind is probably an impossibility Professor Movius comes very near to the ideal. C. B. M. McB.

BABYLONIAN AND ASSYRIAN RELIGION. *By* S. H. HOOKE. (*World Religions*, ed. by Professor E. O. JAMES). *London, Hutchinson's University Library*, 1953, *pp.* XII, 128. *Price*, 8*s.* 6*d.*

In the preface to this book the author modestly states that his intention was to offer an introductory manual to the study of Babylonian and Assyrian religion, and this intention is most efficiently carried out, for that is precisely what the book is. It is not intended for the specialist, but its purpose is to give to any ordinary reader interested in the subject a clear and comprehensive account of the religion of ancient Mesopotamia in its various manifestations. Anybody who reads the book attentively will acquire a great deal of valuable information. It is stated (p. XI) that the purpose of the book is to put at the disposal of such a reader the results of the most recent researches of scholars, and for this reason the opinions of Professors Sidney Smith, Henri Frankfort, and Thorkild Jacobsen are quoted with approbation, but controversial subjects are wisely avoided.

The author adheres to the view that one of the distinctive characteristics of Assyrian religion, in contrast to that of the Babylonians, was ' the prominence of gods of war ' (p. XI). War-gods, however, were known from the Third Early Dynastic period onwards. It might be argued that the Great Gods, especially gods of city-states, were believed to comprise in their own persons many diverse characteristics. The aspect of which their people had most need at any given moment was the one which was brought into prominence. Thus Lagash, a progressive, even aggressive, city-state, required a strong leader and therefore honoured as city-god Ningirsu in his warlike aspect. In Assyrian times conditions were disturbed, and therefore a god with a forceful, bellicose personality became a necessity.

The statement (p. xii) that ' Babylonian religion was a magico-religious system based on the fear of evil spirits ' (which would imply that it was fundamentally devil-worship) seems very rightly negatived on p. 16, where it is stated that ' the Sumerians built up an elaborate and advanced culture whose basis was agriculture, a fact which determined the character of the religion ', and on p. 39 where mention is made of ' its original agricultural and fertility character '. The influence of natural environment and conditions upon religion is discussed, and it is pointed out that ' in Mesopotamia where the creation of an ordered civilization was the result of a hard struggle against destructive and incalculable flood ' from the great rivers ' the origin-myths were couched in terms of conflict with hostile powers personified as Tiamat and Labbu '. Consequently the king, in the guise of Marduk, annually slew Kingu in mimic combat, won the cosmic battle against chaos, and created the orderly world anew.

A brief account of the Great Gods follows, and of the institution of divine kingship with the qualifying proposal that the term ' sacral ' should be substituted for divine (p. 36). Then comes an excursus on Tammuz with references to the more recent literature on the subject, a list in which *Tammuz* by Anton Moortgat (Berlin, 1949) should have been included. It is suggested that perhaps the liturgies which describe the destruction of temples of Tammuz do not refer to historical events, but that there was a ritual destruction of the sacred buildings as part of the proceedings in the annual ceremonies connected with the disappearance of Tammuz. The objection to this theory is that usually the lament is for the destruction of temples which did not belong to Tammuz, but to divinities of much higher rank. In reference to the relation between Ishtar and Tammuz an attempt is made to explain the symbolism of the cedar tree by arguing that the cedar ' represented both the male and female divinity, one fallen and then raised up, for the dying and rising Tammuz, the other in the verdure and sweet smell of its luxuriant branches, for the goddess seeking her husband ' (p. 42). This point of view is supported by passages from the Old Testament. Nevertheless, symbolism which had one meaning for the early Sumerians may have had quite a different significance for comparatively late Hebrew prophets, especially as they substituted a fir tree for the cedar and applied the symbolism to Javeh.

A description of incantation rites to heal the sick leads to a mention of the doctrines of substitution of personality with that of the god, and of the scapegoat. The theory of the origin of sacrifice is said to have developed along two main lines : (1) a group of sacrifices expressing in various ways the three main ideas of substitution, placation, and purification, developments from the early ritual connected with the cult of the god ; (2) a group which arose out of the conception of the god as owner of the land. This leads to a description of the temple buildings and personnel.

The earliest temple is said to have been a reed hut surmounted by the gate-post with streamer, symbol of the divinity. It was in reality the sacred sheep-pen. Excavations have revealed, however, that the earliest permanent buildings, apart from silos, and sheep or cattle-folds, and even those at some neolithic sites such as Jarmo, were approximately rectangular in ground-plan. A sheep-pen might possibly have been the scene of one particular act, but it is inconceivable that sacred ceremonies could be performed several times a day in such an environment, especially as the relief which is supposed to picture this earliest form of ' temple ' shows that the animals still inhabited their byre and went in and out as usual. According to the theory expounded in this book this simple sacred structure rapidly developed into a vast complex of sacred buildings. In most great cities there was also a ziggurat, which is said not to have been a temple, although its meaning is not explained.

The various classes of the priesthood are enumerated, with a description of some of their duties which included the daily washing, dressing, and feeding of the images of the gods, observations of omens, divination by various methods, the interpretation of astrological phenomena, incantations to cure the sick or to avert evil influences.

Allusion is made (p. xi) to ' the central importance of myth in the religion of the dwellers of ancient Mesopotamia '. It seems more likely, however, that it was the rite which was of central importance, and that the myth was formulated to explain to the laity why the rite was instituted, its meaning and purpose, and the results which its due performance would, it was hoped, obtain. Myths are said to be of two kinds, ritual-myths and origin-myths ; some myths, like the Creation Epic, partook of the nature of both categories. A brief summary is given of the principal epics and myths, and a small but instructive selection of the hymns, prayers and incantations in translation.

From this brief summary of its contents it will easily be perceived that every reader, specialist and non-specialist alike, will find something to learn from the interestingly developed theme of this book. E. Douglas Van Buren.

ANTIQUITIES OF THE IRISH COUNTRYSIDE. *By* Sean P. Ó'Ríordain. *Methuen and Co. Ltd., London, Third Edition, revised and reset* 1953. *pp.* 183, 88 *plates,* 5 *figures in the text.* 15*s. net.*

We are again lucky to have an account of the antiquities of the whole of Ireland described by such an authority and field worker as Professor Ó'Ríordain, for though he explains in the preface that this book is not intended for the archaeologist, but for the questioning man in the street, its standard of scholarship, and the inclusion of recent work both by the author and others, makes it valuable to any one interested in Irish antiquities. It is expressly stated that ' monuments such as churches, high crosses, round towers and so on are not dealt with, since their study involves the subjects of architecture and art rather than archaeology proper ', a distinction the author has the right to make if he chooses.

The Palaeolithic period is ruled out, and the Neolithic is confined to a brief period ' covering perhaps, a century or two before and after 2000 B.C. and inextricably overlapping with the incoming Bronze Age ' which seems to have been, as far as is known at present, overwhelmingly the most important period in Prehistoric Ireland. The chapters are not arranged chronologically, but in subjects, such as forts, house sites, burial mounds, stone alignments, and so on. Ring forts seem to have been a local invention, and are, so far as we know, not matched, generally speaking, in England. Built of earth or stone, their number ranges from thirty to forty thousand. They were defensive enclosures to homesteads, and so are found on low as well as on high ground. Ring forts have been proved, in some cases by excavation, to belong to as early a time as the early Bronze Age, and persisted until the 11th century A.D.

Hill forts are often larger, and were, in some cases, built to enclose the summit of a hill, and may contain as much as twenty acres of land. They vary in some particulars from British Hill forts, and that at Tara has a ditch inside the bank. The author thinks it probable that they are related to the British forts of Iron Age date, and that they were probably introduced into the country at that time. Only one has so far been excavated, and the evidence gave a date of the 4th century A.D.

Much more seems to be known in Ireland than in England about early houses and domestic settlements, for all too large amount of our information comes from graves of some type or other. Ancient cooking places seem to abound in Ireland, known by the Irish equivalent of ' deer roasts '. The mound is formed by the discarded stones used

as pot boilers. One of these sites recently excavated near Ballyvourney, Co. Cork, revealed two hearths, a wood-lined pit for boiling, a stone-lined pit for roasting, and a wigwam-like structure evidently intended for storing the meat. Experiment showed that cooking could be carried on quite efficiently with heated stones—the wooden trough contained one hundred gallons of water, which was brought to the boil in half an hour.

Within the encircling walls of the forts, huts, crannogs and souterrain dwellings are described.

Perhaps the chapters on Megalithic structures are the most interesting in the book. The similarity of the plan and elevation of Newgrange to the Treasury of Atreus is again illustrated, and shows the westward spread of the Megalithic tradition of building. The corbelling of roofs is particularly well illustrated in the plates, as are also the scribings on the stones.

There is a useful bibliography of both books and periodic literature, and it is impossible to praise too highly the plates, while the text figures are admirably clear. Both endpapers are printed with a map. Unfortunately for us, many of us are not as conversant with Irish geography as we should be. The sites mentioned in the book alone are included and though the county divisions are outlined, they are not named. Thus we cannot fix ourselves by seeing Dublin or Belfast as a guide. We are at sea on land, and such names as Uisneach or Poulapucha or Gotoon are alas, unfamiliar. Perhaps in the next edition we may be given a little help. We shall be glad of it when we take this book with us to Ireland. DINA DOBSON.

THE HITTITES. *By* O. R. GURNEY. *pp.* XV+240, 32 *pls.*, 19 *figs.* *Pelican*, 1952. *Price*, 3*s* 6*d*.

Experts on Hittite culture and language form a small, distinguished body, scattered in various countries, united by the mastery of an erudite and fascinating subject : England is fortunate in possessing one of them, the author of this book. The book, therefore, is authoritative, as one would expect, but it is a great deal more. It is so well written that all the main aspects of Hittitology are dealt with in a comparatively short space ; so honest and judgmatical that every word can be trusted ; last but not least, it is wholly absorbing. In short, Dr Gurney has produced an almost ideal Pelican, useful to his immediate colleagues, invaluable to specialists in other fields, and containing much to delight a wider public. That appeal is achieved partly by simplicity and directness of narration, partly by the use of apt quotations from texts which allow the Hittites to speak for themselves, partly by the nature of the whole story.

It is one which challenges attention from the outset : an account of the circumstances leading to the discovery of a great nation established on the Anatolian plateau during the second millennium. As recently as 1880, Sayce's theory of that nation's existence was a surprise. But the explorations of archaeologists together with literary evidence from the Amarna letters indicated that he must be right, and a climax was reached in 1906 when the archives of the Hittites were unearthed at their capital, Bogazköy. Progress has been swift.

So the Hittites can now be presented to us : forceful rulers, fine soldiers, formidable queens (meet the king's angry sister who 'bellowed like an ox'), administrators with more social conscience, less cruelty, than most of their contemporaries ; the first writers of history in annal form. Their records have a characteristically vivid, explosive style, and even their law-reports are lively. It is surely no coincidence that, whenever drama flags and the pace becomes pedestrian, we find that we are concerned with what Dr Gurney regards as a non-Hittite element in the population. Instances of this are religion

and the basic material of folk-lore. Fortunately, the writers of the tales redeemed their material. To them we owe the memorable words : ' why, when I am sleeping and nursing a temper, do you force me to make conversation ? '

Scholars, while enjoying the human side of the book, will consult it for other reasons. They will, for instance, quickly realise that Dr Gurney is giving them, concisely and palatably, the essence of numerous important publications and of his own independent researches. And they will specially appreciate a quality which might be called either caution or fair-mindedness, whereby they are enabled to watch how two sides of controversial questions are weighed in the balance : in consequence, they will tend to accept the author's verdict whenever he considers one possible. Surely that is the best approach.

They need, perhaps, a little more guidance than they are given in assessing the main contributions of the Hittites to art. Though it is emphasized that Hittite genius was responsible for the magnificent use made of rock-faces to display carvings, though there are good observations about the development of high relief towards sculpture in the round, each reader must form his own opinion concerning those curious qualities which make the artists' work attractive to some, repellent to others. As regards religion, the fact that Kültepe idols are briefly described should have involved an allusion to the prehistoric cult which they embodied, and which, apparently, survived. On p. 197 a lead figurine, also from Kültepe, is mentioned, but his many relatives from Alishar need mention too. These are minor points.

A good set of plates and figures illustrates the text, and what a nice idea it was to include a photograph of a modern house under construction in the ancient manner. One wishes that the publisher could have placed all plates in one group, for easier reference.

A few omissions in the archaeological section of the excellent bibliography will, no doubt, be supplied in the next edition. In particular, Bittel's *Neue Untersuchungen* (1935) and *Ruinen von Bogazköy* (1937), should be added, as well as Koşay and Arik's Alaja volumes, which are not lacking in material of the appropriate period.

WINIFRED LAMB.

TREASURE IN THE DUST: ARCHAEOLOGY IN THE NEW WORLD. *By* FRANK C. HIBBEN. *Cleaver-Hume Press*, 1953. VII, 280 *pages*, 16 *plates*. *Price*, £1 5*s*.

This book does not, as its sub-title might suggest, cover the whole of the New World but only the United States and the Eskimo area, with a glance at Central America. It is written in a light and popular style, not without some irritating features, but in spite of this the author succeeds in presenting a surprisingly sound and balanced account of most of the area he deals with. Apart from questions of fact, the author's theoretical standpoint is unreservedly orthodox, in that he would admit no importations of culture traits to America by other routes than the Behring Straits.

After four introductory chapters, which dispose of Atlantis, Mu and the like, and go on to deal with the early hunters and the beginnings of agriculture, the book consists of a series of essays on different areas. In this way the Eskimo, the Northwest Coast, California, the Southwest, the Plains and the East are covered, in some cases in more than one instalment. In some chapters, particularly that on the Northwest Coast, there is a legitimate use of constructive imagination to fill gaps in knowledge. A book of this size with so few illustrations cannot be regarded as a text book of the archaeology of so large an area, but as a popular introduction to America north of the Rio Grande it may, with certain reservations made below, be highly commended. The two short chapters

on Mexico and the Maya, on the other hand, are quite inadequate and would have been better omitted. A great deal is compressed into a small space with the author's usual skill, but he has attempted the impossible. In addition, he is out of date, and he has missed the radiocarbon dates for the Mexican ' Archaic ', which show that the earlier or Zacatenco stage existed in about 1500 B.C. and the Cuicuilco stage under the Pedregal in about 500 B.C. The worst fault in these chapters is the repetition of the error, long exploded, of ascribing Teotihuacan to the Toltecs, which led Vaillant and others into great difficulties in trying to explain a non-existent conflict between tradition and archaeology.

Although they do not vitiate the book as a whole, there are other mistakes, of which I select a few, which the author, as a professional anthropologist, should not have made. His use of radiocarbon dates is sometimes rather uncritical, and we are told in the introduction that ' instead of saying that some early American hunted now-extinct bison on the plains of Texas around fifteen thousand years ago, we can say much more exactly that this fellow plied his trade there in 9500 B.C.' (p. 13), which would lead the uninitiated to expect far too great an exactitude for the method. The date (p. 45, repeated on p. 266) of over 20,000 years for buried wood in Alaska has no bearing on the antiquity of man in the New World since the wood has no human associations, neither has the 10,000-year old sloth dung in Gypsum Cave. The most recent determinations available here have shown the Cochise food-gatherers to be later than the early hunters, not contemporary with them (p. 37), since the earliest Cochise stage has yielded a date of approximately 6000 years, not ' almost 8000 ' (p. 42). It is possible that Dr Hibben has access to more recent information than we have, but other details in the book render this very doubtful. The statement that the Basket Makers used no houses (p. 123) is out of date, since examples have been excavated at Durango, Colorado. Finally, the date of 8000 B.C. for the beginning of agriculture in Mesopotamia (p. 55) is surely far too early.

G. H. S. Bushnell.

THE ARCHAEOLOGY OF THE EASTERN UNITED STATES. *Edited by* J. B. Griffin. *Univ. of Chicago Press* (*Cambridge Univ. Press*). *Price*, £3 15*s*.

This massive book is a Festschrift for Prof. Fay-Cooper Cole of Chicago, containing contributions by 27 of his former students and one other. Comparison with another Chicago publication, Martin, Quimby and Collier's brilliant compilation, *Indians before Columbus*, at once springs to mind, since it might reasonably have been hoped that this new work would do for a smaller area, in a fuller and more up to date fashion, what *Indians before Columbus* did so well for the whole of the United States. The older work can be used by the interested amateur as well as by the specialist, both abroad and in the United States, but that under review is certainly not for the amateur, though it seems to be partly directed towards his American representative.

For the specialist in American archaeology it is undeniably a useful and important work, though it is disappointing in various ways. It contains a vast amount of material, a rich bibliography and numerous illustrations of typical objects, though these are very unequal in quality and some, particularly figures 154 to 161, are downright bad. Most of the chapters were written in 1947 and many were abbreviated though not radically revised in 1951 ; there must have been sufficient cause for this delay in publication, but in a time of great archaeological activity it cannot fail to cause much of the book to be out of date. Radiocarbon dating, for instance, only finds a place in a kind of appendix written by the editor, and even so, his general correlation chart, fig. 205, is described as ' definitely a preradiocarbon figure '. Even when allowance is made for the fact that the radiocarbon dates so far available for the later periods in the Eastern United States are

inconsistent and unsatisfactory, the application of the method to the preceramic levels has been a definite step forward, and the sections dealing with them suffer from their omission.

A large proportion of the book is concerned with the description of archaeological sequences in limited areas, often States. A certain uniformity of treatment is ensured by the use of what is called the Midwest taxonomic system, in which archaeological manifestations are classified, in ascending order, as components of foci of aspects of patterns, but in many cases this has resulted in a catalogue of foci which is not for the reader unfamiliar with the district concerned. That this feeling is not confined to the foreigner is shown by a remark from an American source that ' these portions (of the book) are a most effective soporific '. The arrangement of these chapters has a further drawback, since ' the political, economic and academic imperialism of States' rights ', as one of the more interesting authors plaintively calls it, plays too great a part in it. The result is that entities like the Hopewell movement are split up among a number of chapters. It should have occurred to the editor that this defect, perhaps a necessary evil, could have been ameliorated by a good index, but the book lacks any such thing.

Of the more general chapters, two call for mention. One is a reconstruction, based on figurines and on the remains of textiles and ornaments, of Hopewellian dress in Illinois, which provides a welcome diversion. The other is a chapter on dendrochronology in the Mississippi valley. By comparison with the Southwest, where dates go back nearly to the beginning of the Christian era, little has been achieved here, and the actual results given are confined to a span from 1513 to 1588 on a single site. The remainder of the chapter is a discussion of the method, and it incidentally shows how difficult it is to find a set of conditions really suitable for its application.

The Editor's summary at the end, ' Culture Periods in Eastern United States Archaeology ' is an important and comprehensive review, and one can only regret that his style is not more readable. Here is a specimen ' Recognition that a similar subsistence basis can produce similar social structures, as Eggan has suggested, may be the case with the Iroquois, coupled with the increasing archaeological evidence of a long local lower Great Lakes Iroquoian development, plus the physical connection of the Iroquois with early northeastern skeletal material rather completely eliminates the earlier arguments of a relatively late movement of the Iroquois into the northeast from either a southern Appalachian or central Mississippi Valley homeland '. G. H. S. BUSHNELL.

LA NECROPOLE DE FURFOOZ. *By* JACQUES A. E. NENQUIN. *De Tempel, Brugge*, 1953.

This monograph (in French) is the first of a series called *Dissertationes Archaeologicae Gandenses*, edited by Professor De Laet, director of the Seminar for Archaeology of Ghent University, who contributes a Foreword in Flemish ; it is also an ' extraordinary publication of the Archaeological Society of Namur '. Thus three towns have combined to produce a most useful piece of salvage work. Furfooz, best known because of the palaeolithic remains found in its caves, has also a cemetery of Germanic mercenaries covering the period approximately from A.D. 350 to 400 and thus one of the earliest of its kind. It was because it illustrated the transition from a romanized to a Merovingian regime that it was chosen for re-examination. This was necessary because the cemetery was excavated first in 1876 and 1877—the date alone is sufficient explanation—and again in 1900–2, 1905 and 1932. Even so a complete account still cannot be written owing to a reprehensible lack of cooperation by the last excavator, who has not only failed to produce a proper report of his own excavations of 21 years ago, but

has not even published his plan of the fortress in which the burials were made. For this reason the present author has had to be content with reproducing a very ancient and inadequate plan. Nevertheless he has made a gallant attempt to set in order the older finds and reconstitute grave-groups, using the excavators' notes which, with the objects, are preserved in Namur museum. The date is fixed by 39 Roman coins (the latest A.D. 383–8) found in graves, though most unfortunately it was not recorded in which. The most valuable notes were those, not of the so-called archaeologist-in-charge (de Radegués) but of his foreman Jean Godelaine. The finds consisted of glass vessels, handled jugs and other vessels of proto-Germanic types, buckles, combs and fibulae. It is earnestly to be hoped that M. Nenquin will continue his excellent work, which will be welcomed by students of the early Dark Ages in all countries. O.G.S.C.

ROMAN BRITAIN AND THE ROMAN ARMY: COLLECTED PAPERS. *By* ERIC BIRLEY. *Titus Wilson and Son, Ltd., Kendal*, 1953, *pp.* XII+196. 15*s*.

There are republished under this title sixteen papers by Mr Birley that have appeared from time to time since 1935. Some half relate to episodes in the history of Roman Britain, the remainder are prosopographical studies or deal with individual inscriptions.

In the second essay, ' Britain under the Flavians : Agricola and his predecessors ' and the fourth ' The Brigantian problem and the first Roman contact with Scotland ', Mr Birley proposes a time-table for the northward advance somewhat ahead of that commonly accepted. He suggests that it may have been Cerialis (governor of Britain 71–4) ' who was the first Roman governor to lead the army of Britain into Scotland ' (p. 41), and that by Agricola's governorship, ' the back of resistance had been well and truly broken, far beyond the northern frontier of Brigantia proper ' (p. 41). He conjectures that there may have been some reconnaissance of Scotland even within four years of the invasion of A.D. 43. The literary evidence that he advances consists of occasional contemporary references, and on the whole the impression conveyed is not only that the evidence is strained, but that the most important point has not been dealt with.

It may, indeed, be that scouts on reconnaissance had penetrated as far as south Scotland by the turn of the half-century, and that advanced forces had campaigned there before Agricola's governorship. The whole course of military events in the north proceeded so swiftly under Agricola as to presuppose that detailed information about the country, its communications and geography was available at Roman advanced headquarters. Much of this information, such as the strategic importance of key sites, could scarcely have been obtained otherwise than by military reconnaissance. The smoothness and surety of touch with which Agricola's northern campaigns were conducted seem indeed a stronger argument for some previous penetration of the area in question than the contemporary references such as they are. But to ' expand ' territory is one thing and to consolidate it is another. The considered plan for the military control of Scotland was based upon an eastern and western strategic route leading to respective ends of the Forth-Clyde isthmus, upon forts pushed far out to control the south-west and upon a screen of forts blocking the openings of the Highland glens. There is as yet no archaeological evidence to suggest that the execution of this scheme as a whole was carried through before the time of Agricola, nor can it reasonably be supposed that its undertaking was regarded as a practical possibility much earlier. It was only in A.D. 71 that a legionary fortress was established by the ninth legion at York, while that at Chester was founded still later in A.D. 78 when leg. II Adjutrix moved over from Lincoln. Little is yet known of the dates at which the forts on the Humber-Mersey line, to which Mr Birley refers, were founded, but by the time the two legionary fortresses were established

there was over most of the Brigantian area a screen of forts garrisoned by auxiliary regiments. The movement of a legion to Chester may be regarded as setting a seal upon the conquest of Wales : from Chester the legion could move rapidly either into Wales, or northwards, as occasion demanded, and it seems most unlikely that occupation of territory so far in advance of the main bases as to be beyond the Tyne-Solway line, would be begun before A.D. 78.

The essay on ' Civil settlements on Hadrian's Wall ', one of the earliest in the collection, contains a valuable statement of the evidence available at the time it was written. Since then it has gradually come to be realized, partly from information provided by air photographs, that these settlements are very often much more extensive than had been supposed. What was needed when the excavations of 1931–5 at Housesteads led to the uncovering of a small area of the settlement there is even more necessary now, namely the complete excavation of a fully representative portion of a large settlement, such as is available at Housesteads, Chesters, Chesterholm, Binchester or Piercebridge, to name but a few sites in the north.

The study of the Order of Battle of the Roman Army and of the careers of representative officers are subjects that Mr Birley has made particularly his own, and the last seven papers in the book provide remarkable illustrations of the information that can be derived from contemporary records, from inscriptions and from other sources. The essay on prosopographical method is a useful introduction to this research. It is to be hoped that Mr Birley will soon go further and provide that fuller study of the Roman army which much needs to be written and which he is so well qualified to write.

The dust-cover of the book carries an illustration of a remarkable bronze roundel now in the Cabinet de France. It seems to have belonged to an officer serving in the army in Britain some time in the 3rd century. The roundel is very little known and really deserved a place on the title-page or frontispiece, where it would have been more permanently recorded than on the jacket of the book. J. K. St. Joseph.

FARMS AND WATERMILLS IN DENMARK DURING 2000 YEARS. *By* Axel Steensberg (Department 3 of the National Museum, Copenhagen), *Copenhagen*, 1952. 325 *pp. copiously illustrated. Price not stated.*

This admirable book by an acknowledged authority on Danish agriculture is issued in a virtually bilingual form, with Danish and English titles, about 130 pages of Danish text, roughly another 130 pages of photographs with bilingual underlines, and a full English summary of 39 pages. British archaeologists will welcome this friendly gesture on Dr Steensberg's part, and realize that it represents an attempt to place before British as well as Danish readers a mass of important and interesting material, unhampered by the difficulties of language.

At this time when so much attention is being paid to the excavation of medieval village sites in this country Dr Steensberg's work is of special importance. Since 1879 the Danish Folk Museum—Department 3 of the National Museum at Copenhagen—has been studying the historical development of Danish farm buildings, both from surviving examples and from literary sources. Since 1937, however, Dr Steensberg, working for the Department, has employed archaeological techniques developed by Professor Gudmund Hatt for investigating the ground-plans of successive timber buildings erected on the same site, as was the case with most medieval farms. This technique (which, if it were a surgical operation, would surely be called ' differential stratoscopy ' !) consists in uncovering each chronological level in its entirety, irrespective of depth. ' The layers were followed as they were in the ground ', says the author. ' Post-holes were

drawn and levelled into the layer in which they were first visible, so they could easily be attributed to the proper floor level when the profiles came to be drawn '. These long-occupied sites have usually been identified by excavating the known sites of late medieval farms under which they lay. The pollen analysis is fully discussed by Valdemar M. Mikkelsen.

Of special interest is the discovery of a series of water-mill sites at Bolle in Vendsyssel (N. Jutland). These mills belonged to the type which the reviewer called ' vertical mills ' in an article in ANTIQUITY*, in which he discussed their origin and distribution : the simplest and most primitive type of water-mill which seems first to have appeared in the Eastern Mediterranean during the 1st century B.C., and which has survived most vigorously in Norway to-day. At Bolle, Steensberg found the remains of one such mill, together with the mill house, which he considers was built shortly before 1500 and destroyed before 1581. Nearby, however, he also found traces of two earlier mills of the same type, one of which he dates by pottery to about the beginning of the Christian era, and the other to the Roman Iron Age. If this can be confirmed it will throw light on the question of the early spread of these mills, and necessitate some modification of the views put forward by the reviewer in the article mentioned above. In this case, while we may still consider that the vertical mill reached Ireland *via* Spain, it would seem that Scandinavia may have received it direct from southeast Europe across Germany in the late 1st century B.C.

The book is well produced and the photographs are excellent. Unfortunately the principal plans are difficult to interpret because they are overloaded with detail and are not drawn boldly enough ; they sprawl uneconomically across large folders, and yet the details are reduced too small. E. CECIL CURWEN.

GIBBON'S DECLINE AND FALL OF THE ROMAN EMPIRE, *in* 6 *vols* ; *introduction by* CHRISTOPHER DAWSON. *J. M. Dent ; Everyman's Library.* £2 2*s.*

This is a reprint of the 1910 edition. The footnotes, other than Gibbon's own, are presumably those of the 1910 edition, ' O.S. ', and do not appear to have been altered. Internal evidence shows them to have been composed nearly half a century ago. The note on the Antonine Wall, for instance, is completely out of date, referring to something in *Proc. Soc. Ant. Scot*, 1905–6, instead of to Sir George Macdonald's great book. The note (p. 4) on Mons Grampius (*sic*) is also in need of correction. There is a two-page ' bibliography of imperial history ', containing items published as late as the present decade, and also several misprints. The author of the introduction thinks it necessary to apologize for Gibbon's lack of ' understanding of specifically religious values '. In spite of these defects it is all to the good that Gibbon's text is made available again in Everyman's Library, which did so much good in the days when we were young

O.G.S.C.

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We have received a small Tome printed in Hebrew and posted in Jerusalem. The only words (apart from a few quotations) not in Hebrew script are on the title-page, which is at the end of the book—' printed in Israel, 1952 '. The illustrations consist of Roman coins and sculpture, stone walls, views, maps and plans. We presume therefore that the book is about archaeology. This is an extreme instance of the evils of nationalism. How different from the example of those European countries which, desiring to help their readers, print summaries and captions in one of the international languages ! O.G.S.C.

* ANTIQUITY, 1944, XVIII, 130.